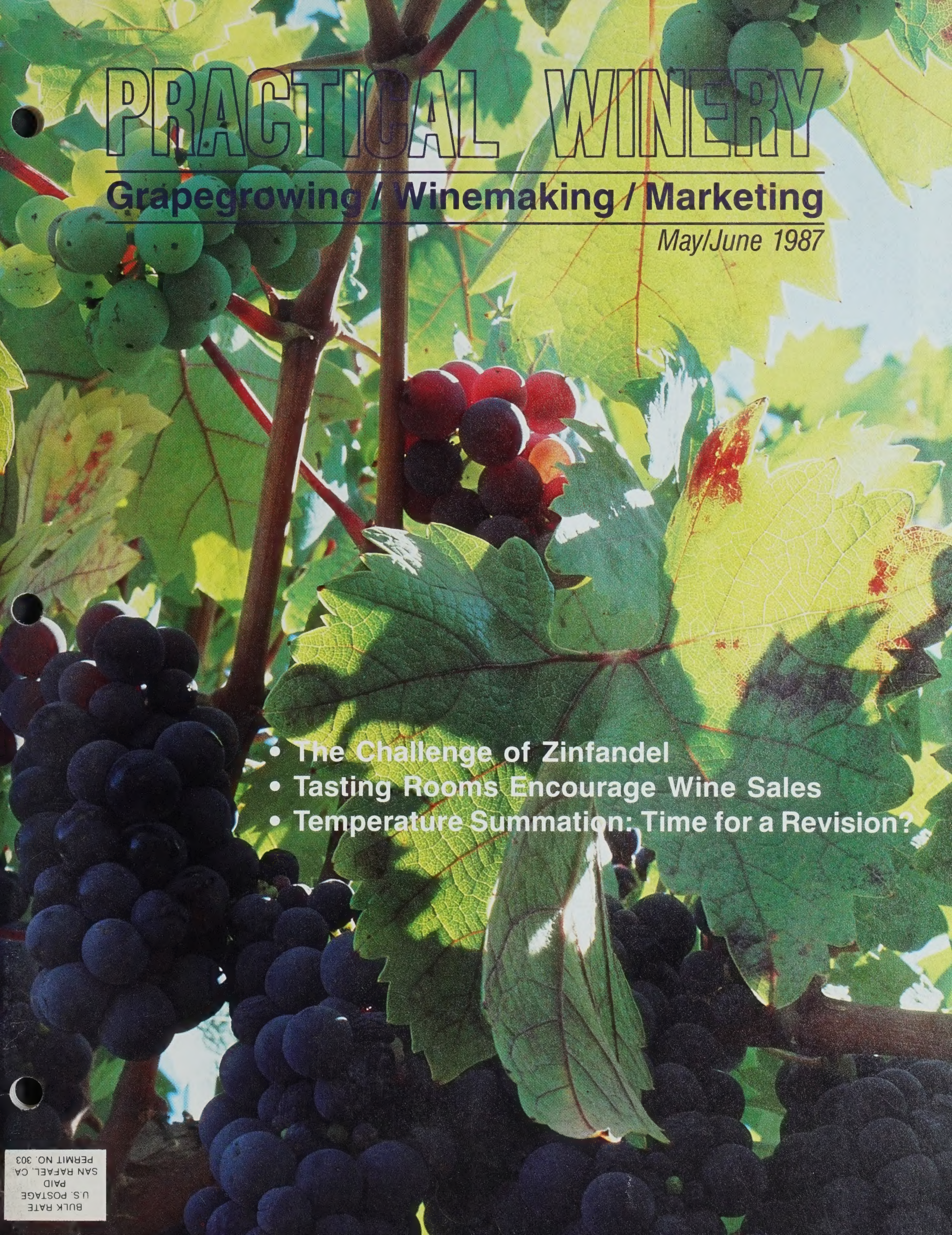
PRACTICAL WINERY

Grapegrowing / Winemaking / Marketing

May/June 1987



- The Challenge of Zinfandel
- Tasting Rooms Encourage Wine Sales
- Temperature Summation: Time for a Revision?

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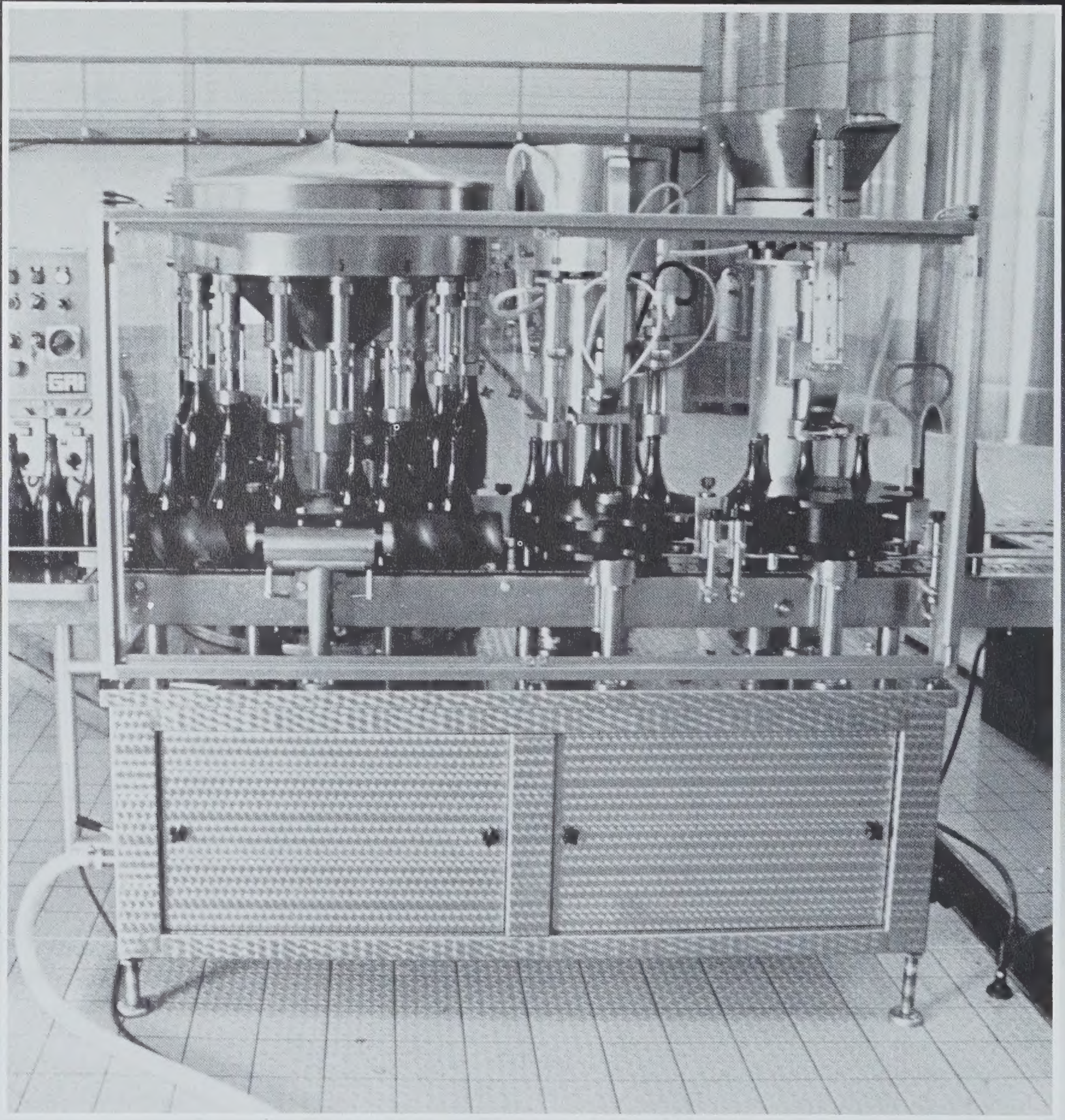

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SCOTT TALKS #2: Another in a series of informal discussions.

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"Preparing a Lab Report is easier when you actually understand the material. When the slashes, dits and dots make sense to me, I can help it all work better for the customer."

Margaret is just one example of the quality of personnel you encounter when you do business with Scott Laboratories. Across the board, through salespeople, lab technicians, cork processors, equipment mechanics, and administrators, each is dedicated to customer service...and satisfaction.

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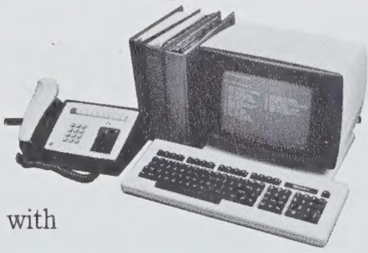

Dear Margaret:

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Grapegrowing / Winemaking / Marketing

MAY / JUNE 1987
VOLUME VIII, NO. 1

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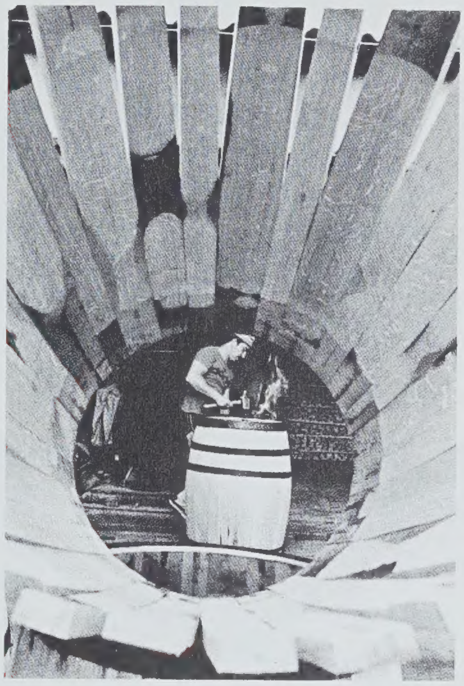
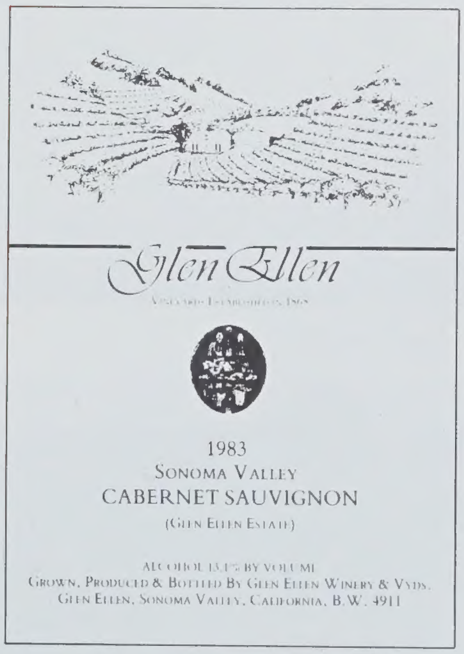


Barrel manufacture is an an important consideration for winemakers.
See page 62.



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Glen Ellen employs successful marketing strategies
See page 72.

Cover

First, second, and third crops on a single vine is just one problem faced by Zinfandel producers. *Photo by Rhoda Stewart*

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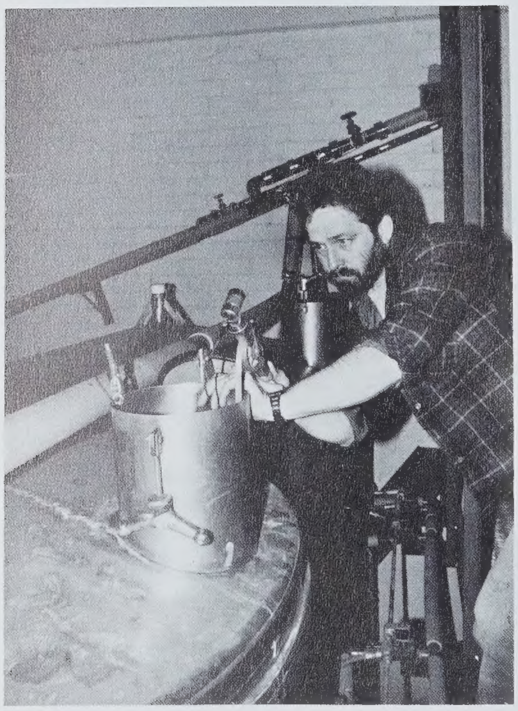
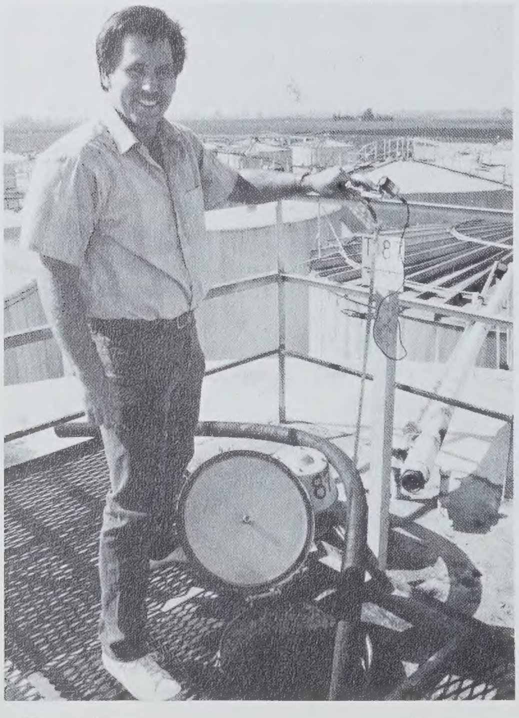
"My manner of living is plain and I do not mean to be put out of it. A glass of wine and a bit of mutton are always ready."
George Washington (1732-1799)

New Installations



Frank Nerelli



Dean Cox

Two Wineries Employ New Wet Bulk Measurement Device

An alternative to the traditional wet bulk measurement technique is currently employed by Pesenti Winery in Templeton, CA, and Sierra Wine Corporation, Tulare, CA. Frank Nerelli, winemaker and vineyard manager for Pesenti, tested the Liquid Level Locator, developed by Lourdex Corporation of Bakersfield, CA, in a three-tank blending procedure.

Nerelli reported that the Liquid Level Locator proved accurate to within 99.91%. Old measuring methods would have produced five times the margin of error, according to Nerelli. "I know it sounds crazy," he said, "but that's how accurate the measurement was. I was really impressed."

Used in the same manner as present hand-held units, the Liquid Level Locator's plumb bob creates an electrochemical potential that is monitored the moment wine is contacted. Sanitation integrity, convenience, versatility, and minimal wear on the measuring tape were also cited as reasons why the new technique has become the winery standard.

Dean Cox, Sierra Wine manager in Tulare, reports that a major concern is the error factor involved with wet measurements when foam is encountered. With tank capacities of up to 1,200 gal/inch, dry measurement has become essential. "Before we used the Liquid Level Locator, it wasn't uncommon to get measurements that were 5,000 gallons in error," he stated. "We tried floats, but this device seems to be much better.

"Since this is a dry procedure, we no longer need concern ourselves with having to wipe the tape clean after each measurement, a definite advantage over the old system." Tape breakage is another problem eliminated by the new method. In a continuing effort to assist crews in efficient data recording, Cox has also devised a waist-high placard with measuring marker and tank identification number for installation on the foot-level access ports of their tanks.

Seven Virginia Wineries Install New Pedia Kreyer Heatpump Exchangers

Pedia Kreyer France installed their new heatpump exchanger in seven Virginia wineries for the 1986 harvest. Winemakers used the exchanger for cooling musts for gravity desludging, warming musts to fermentation temperature, temperature control during fermentation, warming for malolactic fermentation, sweet reserve chilling, warming of cuvee before bottling, cold stabilization, and water heating for barrel cleaning.

The Pedia Kreyer unit works on the principle of a heat pump, using freon and a patented coaxial exchanger. The units automatically control the programmed temperature and the pump moving the wine, must, water, or glycol/water solution directly in a closed-loop circuit. Chilled water or glycol/water may be moved through jackets on the vats or through flag heat exchangers inside the vats.

Pedia Kreyer is now offering its equipment made in Europe from its subsidiary, Pedia Kreyer USA, Inc., San Jose, CA, to wineries throughout North America. Pedia Kreyer manufactures multipurpose, energy-efficient, compact, and mobile stainless steel cooler/heaters.

Pedia Kreyer USA, Inc., is represented in the eastern U.S. by Jacques and Lilian Recht, P.O. Box 1149, Oak Grove, VA 22443-0838, (804) 224-0462). Please contact Pedia Kreyer USA, 1977 O'Toole Ave., San Jose, CA 95131, (408) 922-0155, for further information.

Vinwood Cellars Installs Computerized Control System

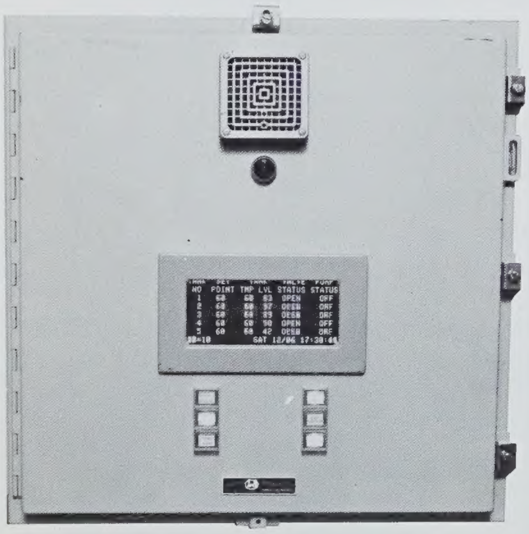
Vinwood Cellars, Healdsburg, CA, has installed a computerized monitoring and control system supplied by Levy Systems, Campbell, CA. The system automatically monitors and controls the temperature of wine in 66 tanks from a central computer. Status information is available to the cellar master at all times on the computer's display screen. Specific information can be selected by operating easy-to-use pushbuttons at the central terminal.

The system includes a reliable, industrial-grade computer housed in a rugged enclosure in combination with smart multiplexers and highly-accurate I/C temperature sensors. In the event of a power failure, the multiplexers monitor and control locally. The system includes hardware and software to print reports and to give an alarm at high tank temperatures.

The computer also alerts the operator to any problems with the refrigeration system's hardware, such as a stuck-open valve. The same computer system which controls temperatures can also control the operation of evaporators and run refrigeration equipment to take advantage of fluctuating energy rate periods. Status information can be displayed at another terminal in the facility or at a remote location via a modem.

Bob Mueller, winemaker at Vinwood Cellars, states, "Before development of the Levy System, the only things available for centralized control were temperature sensors with a long cable. We were very pleased at the ease of installation, because the only link between each multiplexer and the central computer is a single twisted-pair of wire, which makes adding more tanks simple and cost-effective."

Mueller also likes being able to get a printout of tank temperatures either instantaneously or at set intervals. "Finally," he adds, "somebody has come up with a rugged and reliable centralized temperature control system."

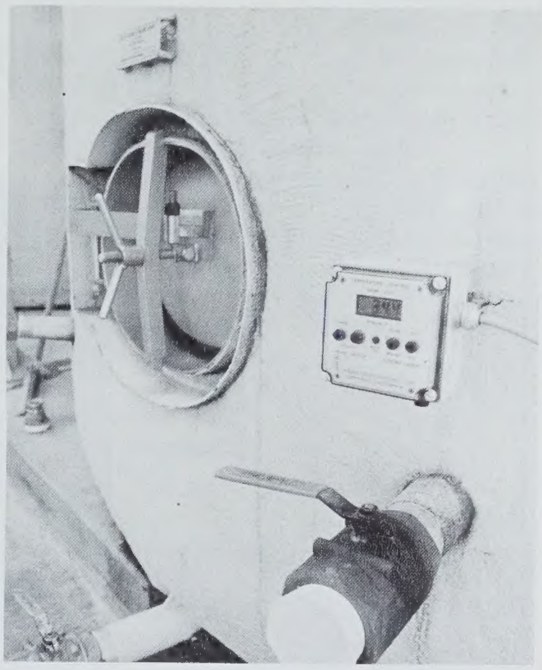


Sutter Home Winery Installs New Digital Temperature Controls

Sutter Home Winery, St. Helena, CA, has equipped 45 of their wine tanks with the latest digital temperature controls manufactured by Expo Instruments, Inc., Sunnyvale, CA.

The self-contained temperature controller features a high accuracy of better than 0.5° displayed on an LCD digital readout. The unit incorporates sealed waterproof switches and a rugged polycarbonate-and-fiberglass weatherproof enclosure.

The totally solid-state units save energy due to their close temperature cycling, allowing the chillers to operate only when necessary. The controllers are mounted directly on the tank or on the probe well, and can be monitored remotely by a central console.



Robert Mondavi Winery Installs New Filler

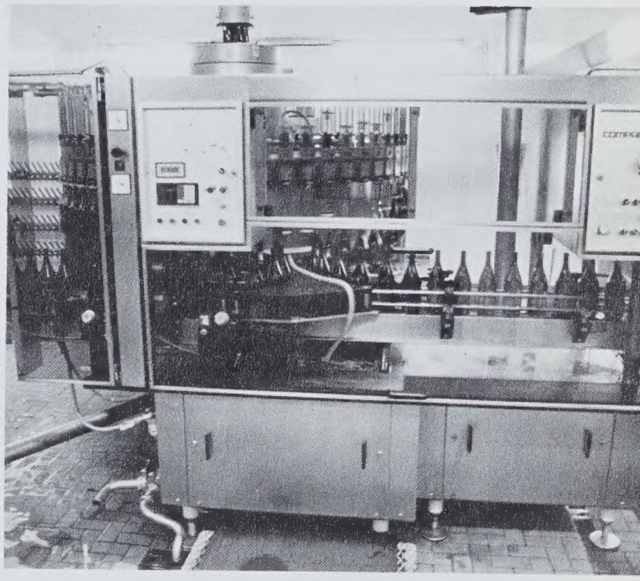
SEN Machines, Inc., has installed a new 56-valve SEN-filler at Robert Mondavi Winery, Woodbridge, CA.

The Compacta-Tronic-filler, the latest SEN development in filling technology, features an isobarometric filling system, operating without vacuum.

The electronically-controlled long-tube filling valves allow a low-oxygen pickup filling procedure (average 0.2–0.4 ppm) without pre-sparging the bottle, and a central, external fill height adjustment, even during operation. A CIP-system is incorporated in the filler.

The rated speeds of the Compacta-Tronic-filler are 200 bpm on 1.5L bottles and 330 bpm on 750mL bottles.

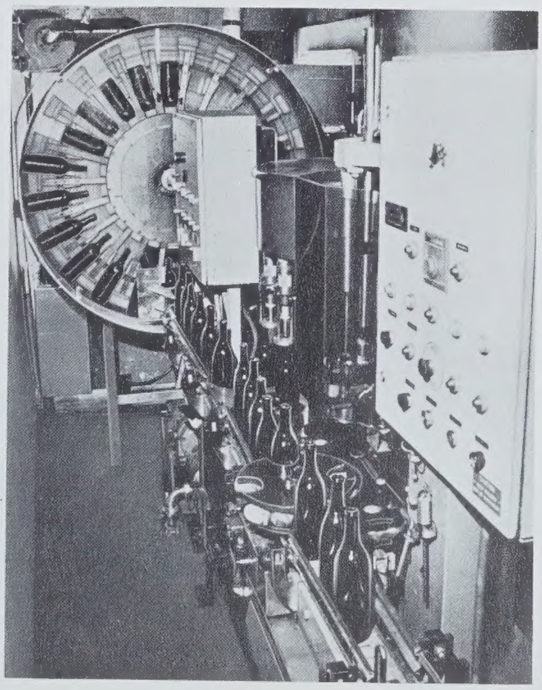
For further information, please contact SEN Machines, Inc., 3095 Kerner Blvd., Suite G, San Rafael, CA 94901, (415) 457-5155.



Mobile Wine Line Installs New McBrady ORBIT Bottle Cleaner

McBrady Engineering, Inc., has installed a new model-60 ORBIT Bottle Cleaner/Gas Sparger on the Mobile Wine Line. This is the smallest unit available and can handle 60 bottles/minute. The rotary unit requires 48 inches diameter of space. The Model-60 has one rotary to handle 750ml bottles.

McBrady has announced that rotaries to handle 375ml and 1.5L bottles can be rented from A-L Welding Products, Inc, 3220 Santa Rosa Ave., Santa Rosa, CA 95401; 707/575-8654. For further information on the ORBIT model-60, #100 or #200, contact McBrady Engineering, Inc. PO Box 204, E.Hazel Crest, IL 60429; 312/798-6565.



The Packaging Specialists

Ben Zeitman, Amador Foothill; Leon Sobon, Shenandoah Vineyards; Chris Benz, Winterbrook Winery; Jeff Meyers, Montevina Winery; Scott Harvey, Santino Winery; Art Dominguez, Alco Packaging.

When the wineries in the Amador Valley decided to market their renowned Zinfandel wines in a proprietary bottle, they called on Alco Packaging, the Packaging Specialists.

Scott Harvey, Winemaker at Santino Winery in Plymouth, California conceived the idea two years ago based upon a European concept.

Alco Packaging participated in the proper bottle selection process and assisted several Amador Valley wineries in the development of special case designs. The net result, embossed bottles in attractive cases with projected annual sales of 150,000 cases.

We are proud to have assisted these dedicated winemakers in making their creative idea a reality.

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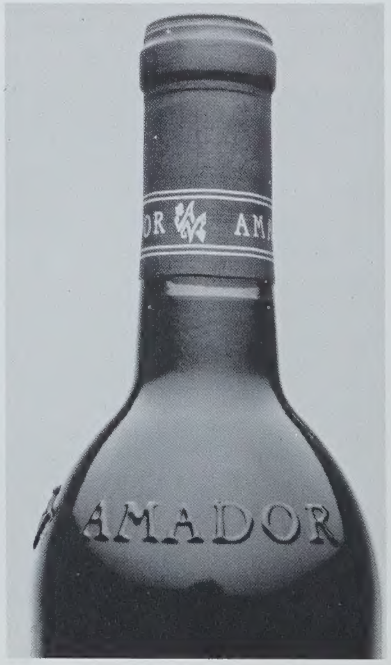

Embossed Claret style Bottle

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Letters to the Editor

Dear Editor:

I think the Healds had a very good idea when they decided to write a report on German Riesling, and it was certainly a wonderful decision of yours to publish it.

The way they treated the subject is remarkable, giving the producer a chance to talk about his estate and his wines, and to subject the wines to a tasting panel.

This article will certainly give the reader a lot of information and is an excellent promotion for Riesling. Thank you.

Sincerely yours,
Friedel Bohn
Burgermeister Anton Balbach

Dear Editor:

Many thanks for the excellent presentation of our wine estates Josefinengrund and Marienhof in the March/April 1987 *PW.*

We think it is very important to publish such information. Readers will be stimulated to think more about German winegrowing and to understand the problems and difficulties connected with this.

Again, many thanks for your assistance.

Yours faithfully,
Walter Bitsch
Franz Reh & Sohn

Dear Editor:

Craig Goldwyn has suggested that I write to *PW* concerning a recent gift to the Cornell University Libraries from Philip Wagner. Mr. Wagner, who owns the Boordy Nursery in Maryland, gave his working library to us for the purpose of helping the Geneva Experimental Station Library to become a reference center for enology and viticulture that will compare favorably to the Shields Library at the University of California, Davis.

We are deeply honored that he has entrusted us with these materials. We believe, as Craig does, that Mr. Wagner, along with Charles Fournier and Konstantin Frank, is the founding father of eastern wine growing. In the years to come, I believe their contributions to this industry and to the economic vitality of our region will grow in importance as the quality of Eastern wines continues to improve.

The collection itself is extensive. It ranges from facsimiles of a *Book of Wines* by William Turner, 1568, a work known to have been used by Shakespeare, to winemaking reports by Arpad Haraszthy, to in-depth studies of the Burgundy wine trade by an economic geographer, to contemporary technical works on cloning.

I believe your subscribers are people who would use our collection. Any assistance you could give in helping us spread the word would be deeply appreciated. I hope that in your own research you will not hesitate to call. We at the Cornell Libraries believe in supporting research and the sharing of knowledge. I look forward to assisting you.

Sincerely,
Richard I. Truitt
Library Development, University Libraries
Cornell University, Ithaca, NY

Dear Editor:

Thank you for your thoughtful review of *The Wines and Wineries of America's Northwest* (*PW,* Nov./Dec. 1986). You concisely and effectively captured the key features of the book as they apply to the interests of your readership.

Let me also compliment you on your fine publication. I subscribe to many wine publications. *PRACTICAL WINERY* is by far the most informative and useful. From my standpoint, the articles on winemaking and viticulture are especially interesting and helpful.

Keep up the fine work!

Best,
Ted Jordan Meredith
Nexus Press, Kirkland, WA

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Dear Editor:

I would like to share some thoughts about the new tax act with *PW* readers and hopefully stir up some response. In my opinion, the old tax act acted as a subsidy to investors in farming in general and vineyards and wineries in particular. This has led to overproduction in the U.S. just as similar subsidy programs have led to foreign overproduction.

It seems to me that the death of tax shelters should have a drastic effect on the vineyard and winery scene. The question is how will that effect manifest itself, and how quickly? If you grant that the large number of limited partnerships and professional-owned wineries (*i.e.*, doctor, dentist, lawyer, etc.) is a product of the old tax act, any change in the rules should cause rational investors to disinvest.

My gut feeling is that, given the enormous investment already in place, each entity will sit tight in the face of logic, and hope they will survive. There should be a period of wine price decline as managers clear inventory to improve cash flow and satisfy investors no longer enjoying the benefits of negative cash flow.

Then, as tanks are refilled, the ugly head of rational economics will be seen peeking through the office door. Those wineries designed as tax shelters will either be restructured, perhaps after bankruptcy, be accepted as a permanent 'hobby' drain on investors' incomes, or, inevitably, close.

Implications for those of us who wish to survive should be addressed just like grapegrowing, winemaking, and marketing. As a small (3,000- to 5,000-gallon) winery, growing grapes and selling all our wine retail, Bainbridge Island Winery was not designed to use the old tax law, and we resented subsidizing our tax-shelter competitors. The new irrigation law and expected increases in irrigation costs should also act to raise the value of the small vineyard owner's primary assets: his back (now worth no more than the lowest-paid worker's) and his unirrigated land.

All we need now is a national farm winery act to protect really small business and family farms. Wineries below 10,000 gallons, with no interstate sales, growing 75–90% of their own fruit, would pay less federal wine tax and, more importantly, pay an estimated quarterly wine tax and replace the monthly reports with a yearly filing.

Two or three people growing grapes, making wine, and selling retail cannot spend precious time on government paperwork and survive. Also, wineries our size simply don't generate enough tax dollars to justify government administrative costs.

It is my understanding that federal monthly reports are designed to tell the giants of the wine industry who's selling what to whom. Small wineries don't care about those statistics, and filling out the forms acts as a subsidy from the tiny to the giant, not to mention the increased administration costs to the government.

That's all I can write now; my fingers are numb after all that pruning, and it's light enough now to get dressed and get back out there on my knees in the mud. Best wishes to all the rest of the 'little guys' out there. Hope I made you think; looking forward to a bright future. Remember, 'small is beautiful'.

Sincerely,
Gerard Bentryn
Bainbridge Island Winery
Bainbridge Island, WA

In Memoriam

The staff of *Practical Winery* is deeply saddened by the passing of Ralph B. Hutchinson, Ph.D., professor of economics at California State Polytechnic University, Pomona, in March, 1987. Dr. Hutchinson contributed many stories to *PW*, most recently 'Parkway Grill's Successful Wine Program' (*PW*, Jan./Feb. 1987). His willingness to cooperate with tight deadlines and a rigorous editing process, along with his wit and good humor, will be sorely missed.

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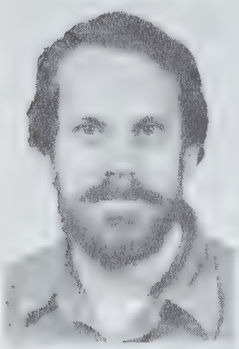

The Wine Retailer

Stan Hock

Big Deals

Maybe it's just the scent of spring confusing my brain, but I can't help thinking that the California wine industry is becoming more and more like major-league baseball.

Major-league baseball?

Well, think of it. In the past few years, there have been quite a few blockbuster deals—major trades, if you will—in which famous 'players' in the wine world have moved from one corporate camp to another. Invariably, the new owners brag about what a vital addition to their ballclub the new acquisition will be, while the old owners apologetically explain that, because age is creeping up on them or because patronage is down, they can no longer afford to keep the star on the payroll.

Reviewing the biggest deals of the past few years, we see that much of the action has occurred in the jug wine leagues. Last fall, National Distillers Corp., a power in the chemical world, traded longtime—albeit fading—superstar Almaden to Heublein, Inc., another corporate monolith with two big-league clubs of its own, Beaulieu and Inglenook. Ten days later, Heublein shocked the peanut gallery by selling all its wine holdings to Grand Metropolitan, a heavy hitter from the British spirits league.

The mighty House of Seagram is discarding all its minor-league franchises—the historic Paul Masson; the all-field, no-hit Taylor California Cellars; and the New York utility trio of Taylor, Gold Seal, and Great Western. Seagram will retain its major-league clubs—Sterling, Monterey Vineyards, and the sparkling Domaine Mumm.

Of course, this hectic inter-league trading has not been confined to the bulk end of the standings. The action's been heavy among the smaller, elite clubs, too.

The trend began several years ago when Japan's Suntory Corporation (acting through its American franchise, Suntory International) bought Chateau St. Jean, Sonoma's glamor team of the 1970s. Then U.S. Tobacco Company (talk about your chewy tannins!), already with slugging Ste. Michelle of Washington in the fold, dealt for Conn Creek and Villa Mt. Eden of Napa, two phenoms of the 1970s which have never quite fulfilled their early potential.

The truly startling transaction, however, occurred on the last day of 1986. The partners of Ridge Vineyards in Cupertino, CA, announced that they were selling their operation lock, stock, and—yes—barrels to a gigantic Japanese pharmaceutical

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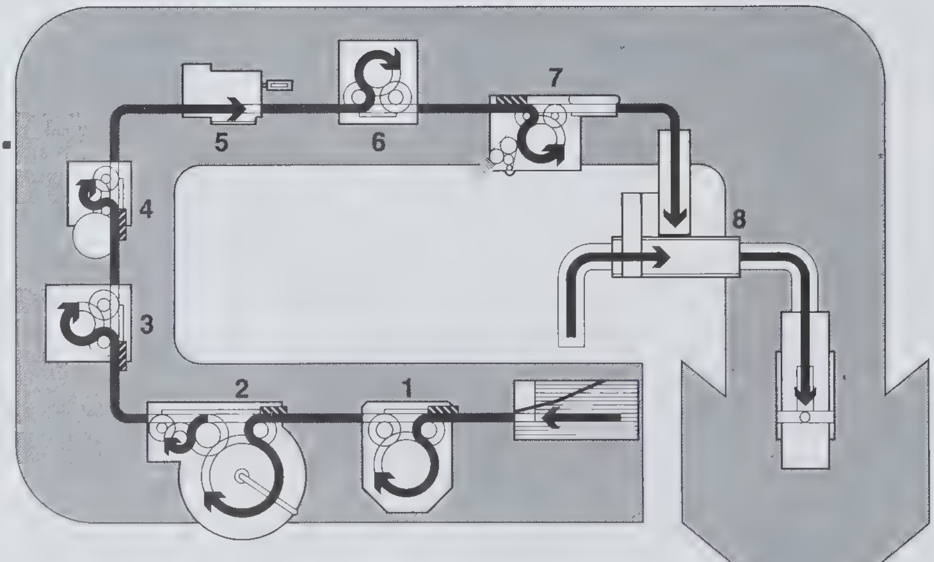

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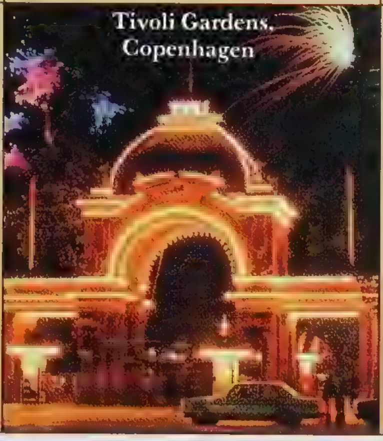

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firm named Otsuka. Ridge fans were stunned. Here was the Babe Ruth of boutique wineries, the sultan of single-vineyard Zinfandels, selling out to—the Japanese? Needless to say, more than a few Ridge zealots have been crying in their Zins ever since.

What's going on here? Is the California wine trade to be swallowed whole by the corporate world, by foreign companies awash in cash?

Will we soon need visas to open bottles of our own wine?

Taking the Long View

It's not hard to understand what's behind all the transactions in the bulk end of the market. Like Pillsbury and Coca-Cola before them, National Distillers and Seagram discovered that selling jug wine is a good way to lose lots of money quickly.

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There are two reasons for this, one old, one new. The old one is called Gallo, the looming giant of the jug wine market, before whom all challengers dissipate both their confidence and their capital. The new one is the currently sorry state of jug wine sales, a result of radically-changing patterns of wine consumption.

Anti-alcohol sentiment, the wine cooler craze, and the penchant of affluent baby boomers to trade up to inexpensive varietal wines have all put the crunch on jug wine producers. Factor in the unabating might of the Gallo brothers, and you've got a powerful incentive for erstwhile optimists to flee the bulk end of the wine business.

But why then does a foreign company like Grand Metropolitan enter the fray? The answer probably is that they have a different view of the trade. As one well-connected industry analyst told me, "They [foreign companies] come in with much more realistic expectations. They see the American wine market as being in an embryonic stage, and they're much more prepared to wait for a return on their investments."

Okay, North American companies are fleeing the bulk end of the wine market because it's not very profitable right now, and foreign companies are moving in because they believe that the spoils go to the patient. It's also easy to guess why owners of smaller wineries sell out to big corporations. As with Ridge, the principals got older and burnt out, the kids aren't interested in picking up the torch (the Zins of the fathers are not visited upon the sons), and the big money proves hard to resist.

Thus, the most intriguing question is: What are big corporations seeking when they buy small wineries? It's hard to believe that the year-end balance sheets of Suntory or Otsuka are going to look much different because they own wineries in California. What's in it for them?

Prestige Factor

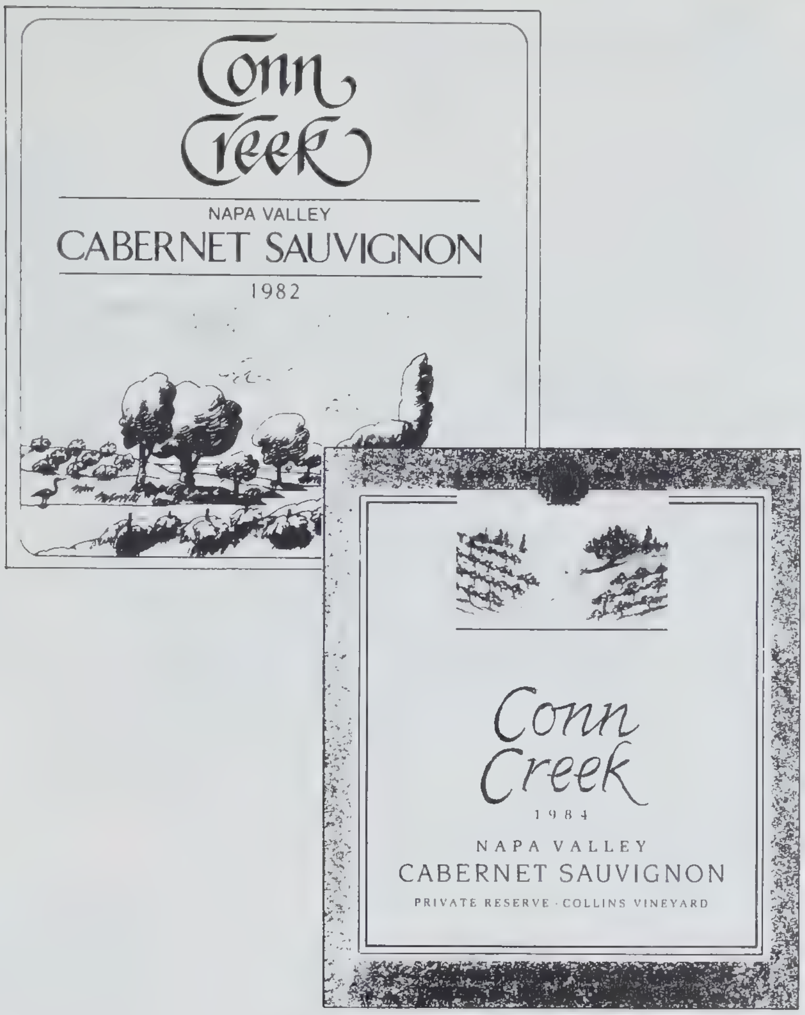
After talking to principals at the aforementioned wineries, it's clear that the answer is prestige, or what we might call the 'jewel in the crown' syndrome. Large companies already involved in the wine and/or food business purchase small, high-quality wineries in order to enhance their reputations in the field. It's a stab at class by association.

"There were three large companies [including Otsuka] that were interested in purchasing Ridge," said Paul Draper, winemaker and partner. "The other two were already in the wine business, and they were primarily interested in maximizing what Ridge has—they were interested in producing larger quantities of Montebello Cabernet. I think that for them, it would have been primarily a financial move, in terms of how we would fit into their profit structure, but it also would have lent prestige to their other brands.

"With Otsuka, prestige was the main factor. Otsuka is a privately-held and family-controlled company, and its president is a serious wine buff, an avid collector who has a 2,000-case winery in Japan. For him, buying Ridge was like purchasing a collector's item. It was a personal decision, not part of their total corporate profit picture."

Dan Gustafson, Chateau St. Jean's national sales manager, confirms that the prestige factor played a major role in Suntory's purchase of Chateau St. Jean. "Chateau St. Jean represents quality; it adds to their [Suntory's] image," Gustafson says. "They're very proud to own it."

Suntory is a diversified multinational company with interests in restaurants, pharmaceutical, spirits, beer, soft drinks, and wine. Interestingly, the company's founder was a wine merchant who, in 1907, introduced Akadama plum wine, still Japan's best-selling wine. Since then, Suntory has become a major beer and whiskey manufacturer (it owns two of the



New ownership has implemented a new label for Conn Creek.

world's top ten liquor brands), the largest holder of vineyards in Japan and owner of one of its largest wineries. It is also Japan's foremost importer of American beer and wine. In short, the company's in the alcohol business in a big way, so it's not surprising that it sought an American 'jewel in the crown'.

"Suntory wanted a presence in this country," Gustafson adds. "They searched for a long time, looking for a winery with a proven reputation for quality. They found that in Chateau St. Jean."

Profit Opportunities

A corporation may buy a small winery for the prestige it confers, but that doesn't mean profitability is not a factor. Allen Shoup, president of Chateau Ste. Michelle, was the instigator of U.S. Tobacco's purchase of Conn Creek and Villa Mt. Eden, and he's frank about the primary motive for the purchase.

"Profit opportunity is the bottom line," Shoup says. "There's a growing demand for fine wine in this country, a continual growth of the fine wine market."

Exploiting this market, however, can be an expensive proposition, according to Shoup. "If you're going to be a successful player in the American wine business, you need to have a strong sales organization, which is very expensive. So we've tried to expand our portfolio in order to amortize the cost of that organization over a larger base."

With the Chateau Ste. Michelle and Columbia Crest brands (plus Farron Ridge, a second label of Ste. Michelle), Shoup's international sales and marketing organization now has 675,000 cases of Washington State wine to sell. By comparison, Conn Creek's 30,000 cases seem like small potatoes, yet Shoup maintains that "if properly managed, Conn Creek can be run very profitably. There will always be a very real demand for status and prestige in this business."

But Will They Change?

As a fine wine merchant, I instinctively react with trepidation to the news that a winery like Ridge or Conn Creek has been sold to a big corporation. One expects the worst: a sudden doubling of production, a retreat from experimentation and singularity, a vulgarization of the brand.

Not surprisingly, the wineries insist that these anxieties are groundless. "We will change nothing," says Draper, who's staying on at Ridge. "We'll have the same wines, the same people, the same marketing. Profits will be plowed back into the winery."

Gustafson reports changes at St. Jean have been minimal. "Sure, there have been some changes, but you would expect that. They mainly have to do with our methods of reporting. Our current production (180,000 cases) may increase by 2–5%, but that's all. Suntory takes a long-term view; it feels that this winery has a track record. Growth will be small, because the company is more interested in efficiency of production."

Allen Shoup does intend to increase Conn Creek's production to about 75,000 cases, but he says that, to this point, there have been few changes in the winery's personnel or winemaking philosophy.

I hope these assurances mean that my worst fears are groundless, that the corporations' scooping up of some of our finest small wineries really are paragons of benevolence, fervently committed to quality.

If so, it means that my nightmare vision of the California wine label of the future was not prophetic. It read:

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In The Cellar

Jake Lorenzo

Editor's note: Jake and I were at a Giants' game the other day. After three beers, I felt confident enough to admit to him, "You know, Jake, the real reason I moved from L.A. to the Bay area was because I couldn't stand the Dodgers." Jake gave me a thoughtful look and replied, "L.A. will be Superior some day." Superior to what, I wasn't sure, and it seemed like a funny thing to say at a Giants' game, but I decided what the heck, maybe it was the Hornitos, so I raised a fresh beer and said, "I'll drink to that."

Superior sits ugly and dusty on a spectacular box canyon plateau. The rock mountain mesa behind Superior thrusts upward into the crystal-blue Arizona sky. Even now, you have to blink away the vision of Apache warriors atop the mesa.

To the left, as you enter the town, stands the long, flat mountain of tailings. Excreted from the copper mining process, they sit, an ugly reminder of the town's life blood. The copper mine fueled Superior. Men would load themselves into the rusty metal elevators and descend into Arizona hell. They would escape ten hours later dirty and dehydrated. The Superior copper miner could pound down six beers after his shift and not even get a buzz.

The copper miners were hard, tough, proud men who did their work and earned their pay every day. In the heat and darkness of the pit, they couldn't see that copper pennies were worthless, that telephone companies had abandoned copper wire for fiber optics.

The corporate executives gave the miners seven days' notice when they closed the mine. Dumped them, like copper tailings, to sit and rot. Superior died three years ago.

* * *

I was in Arizona for spring training. Baseball's idyllic rebirth. Rising like a phoenix from the ashes of the past season, each team convinced that this will be the year.

Spring training was tennis in the mornings, ice-cold beers by the pool at 11 a.m., more beer, peanuts and hot dogs at the game while the best hecklers in the world worked themselves into shape. After an afternoon swim, it was out for a fine, inexpensive steak dinner made great by a vintage bottle brought from Sonoma and served for the ridiculous corkage of $2.00.

This year was different. The snowbirds have come to settle, ripping out the orange groves to put in their condos, motels, trailer parks, and fast-food restaurants. The games are sellouts. The hecklers are gone, replaced by drunken college kids. People argue for hot dogs and fight over beers. Another of life's treasures relegated to a fond memory.

So instead of going to the Giants' game, I drove the 50 miles from Phoenix to Superior. I met an old friend from a past life and we talked of fond memories. We drove through the tunnel to Oak Flats. We admired the incredible rock formations in the pass and watched them take ghostly shape in the aftermath of a bloody sunset. We ended up in the XXX Bar at quitting time.

The bar filled up. My friend introduced me to the men of Superior. They remain hard, tough, and proud. One after another, we met, spoke, and drank. Beers piled up in front of us five and six deep as new friends bought round after round.

I ended up in a stupor on a stool next to Grr. Grr was a mechanic, a damn good one, he told me often. He hadn't shaved for a few days. He wore working clothes and boots like a cellar rat. His watch cap was pulled low over his eyes. "I drink beer and whiskey," explained Grr, "but when I'm out to dinner with my lady, I like some wine, some good wine."

The next day, on the ride back to Phoenix, I thought about Superior and Grr and that bottle of wine. If a damn good mechanic in a town as remote as Superior is going to drink wine, if he's going to make the magic in that bottle part of the magic in his life, then the future burns bright for California and the wine industry.

If liquor salesmen, who appear to be congenitally unable to sell wine, don't catch on soon, then they'll be like the copper miners in Superior. They'll wake up one morning wondering when their pennies became worthless.

If people in Sonoma and Napa and the other rare and great growing regions of the world don't recognize how special a life viticulture and winemaking provide, then they are doomed to see condominiums and shopping centers planted in their precious soil. Soon the few vineyards left will be no more than that mountain of copper tailings alongside Superior: another of life's treasures relegated to fond memory.

Later, sitting by the pool in the hot Arizona sun, sipping on a half-pint of Hornitos, I was hit with a vision that made me laugh out loud. In my mind's eye, I see Grr ride into Sonoma dressed as an Apache warrior on a bright white horse. He puts piles of money and sacks of copper pennies in front of greedy businessmen in clown suits. He buys the McDonald's and has it torn down. Grr says, "This land is too valuable to plant fast-food restaurants. This land was meant for grapes."

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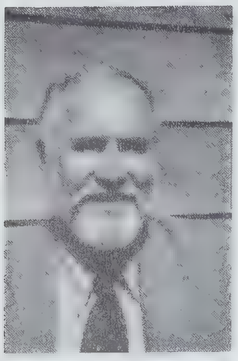

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D.R. Storm, Ph.D., P.E.

Toxics Everywhere

It is strange how the word 'toxic' has slipped into our vocabulary with ever-increasing frequency, as public consciousness is gradually elevated about the poisons that seem to be everywhere. There is even a 'Ghostbusters'-type movie available in our local video store called 'The Toxic Avenger'.

The federal government has enacted a number of landmark laws which seek to protect us from man-made and natural toxins: the Toxic Substances Control Act, the Safe Drinking Water Act, the Federal Water Pollution Control Act, and the Solid Waste Reclamation and Recovery Act.

In early November, 1985, California voters overwhelmingly approved an anti-toxics initiative which, among other things, would require the state to publish a list of chemicals known to cause cancer or reproductive toxicity. It will be similar to the U.S. EPA's toxic dump inventory, which identifies pieces of contaminated real estate that were definitely to be avoided.

While California's 'toxic substance list' may mean something to an organic chemist, it seems to me that the average Californian is going to find it difficult to know whether he has encountered 1,3-5 trimethylbenzene or dibromochloromethane or any other of the hundreds of toxic substances that will be on the list.

We all know when we have been affected by second-hand cigarette smoke or pesticide drift from flying crop dusters, but these other rather impressive poisons are going to be difficult to avoid if they are, in fact, abundant in our environment. I harken back to a more blissful era, when we only worried about transmittable diseases and avoided only those things that had a skull and crossbones on the label.

In the early 1970s, I became involved in large-scale field testing of the re-use of municipal sewage sludge for reclamation, improvement, and fertilization of agricultural soils. As part of our research and reporting, a number of scientifically strong, epidemiological studies were cited, which described the apparent health of workers and technicians who worked daily with sewage, sewage sludge, and sewage screenings.[1]

The workers were, with several exceptions, remarkably free from diseases. Those whose health records did show typhoid, cholera, and hepatitis had usually had some unusual exposure, like falling into a sewage aeration tank or being sprayed with sewage sludge from a faulty pump seal.[1] Somehow, those findings gave me some degree of confidence in working with materials that were known to contain pathogens and poisons, if reasonable care were exercised in handling them.

All of that confidence was recently shaken when I read an article describing the untimely deaths of several NFL football players from Lou Gehrig's Disease. One of the common threads in all of the epidemiological work done thus far to explain the coincidence of the rare disease among football teammates (normal occurrence 1 in 100,000 population) on the same team, was the fact that the turf upon which the players practiced and played was fertilized with sewage sludge. The other commonality was the rather widespread use of steroids in the 1960s among NFL players to build up and augment body strength. I'm hoping selfishly for the steroid connection as the culprit in this tragic medical mystery.

No one can escape being exposed at some time to some of the potentially harmful chemicals, energy sources, and microbiological pathogens that are found in most places on our planet. For example, I still heat my cold coffee in our microwave oven and stand in front of it defiantly. I often wonder if the electromagnetic radiation or the caffeine will eventually be my undoing.

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[1] Virarahgavan, T. 1973. 'Occupationally-Related Health Hazards in Wastewater Treatment Systems'. Water Pollution Control Federation Newsletter. November 1973.

Flow Measurement

Metering

Somewhere in your winery, a flow meter is probably clicking away, recording the volume of water that passes through the device. Also, it is likely that your flow recorder may be whirring, humming, or emitting no sound at all. The types and various applications of meters are the subject of this column. The March/April 1987 *PW* 'Winery Water & Waste' column discussed the requirements for wastewater system monitoring and included flow rate and volume as a key item to be measured.

Normally, this subject would not rate a serious discussion, but in recent years electronic, magnetic, and sonic flow meters have entered the marketplace, and it is important to know that devices other than a simple oscillating disk-type meter are available for a wide variety of flow measurement applications.

Fundamentals

Of greatest importance to wineries is the measurement of potable water into the winery. If there are subdivisions of flow within the winery into process, sanitary flushing, landscaping, and culinary uses, and the subsequent wastestreams are also subdivided for treatment and disposal, then the placement of the meter within the potable water pipe network to measure the use component of interest is of great importance.

From a pure hydraulics standpoint, if it is possible to determine the velocity of the fluid and the geometry of the conveyance or conduit (stream, ditch, pipe, or flume), then flow rate can be calculated.

Rough field measurements of streams are often made by noting the time it takes for a stick to pass a given measured reach. Then, knowing the approximate geometry of the stream and the distribution of velocity in a horizontal and vertical sense, the rate of flow or stream discharge can be determined. For something as small as a hose, a 5-gal bucket and a stop watch

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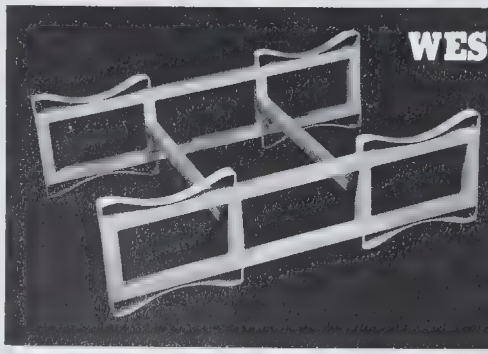

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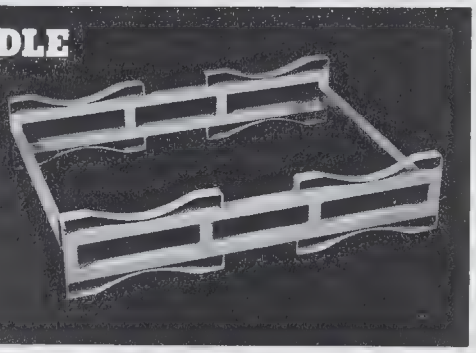

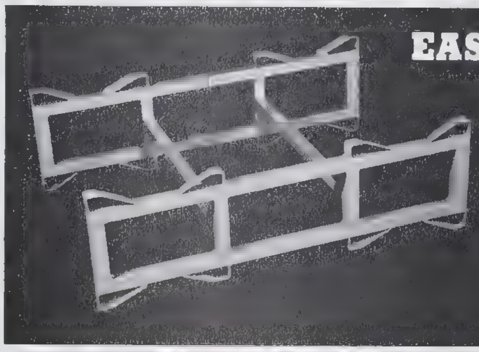

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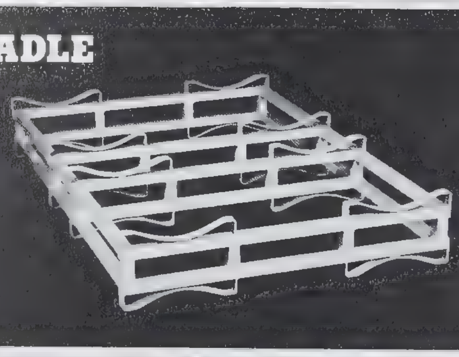

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could very quickly give you the rate of flow from a hose within the winery.

Most open-channel flow (non-pressure sewers, ditches, culverts, streams, spillways, etc.) situations require the measurement of stage or level at a given control point, again where the geometry and cross-sectional area of the wetted section are known. So-called stage recorders are employed for level change measurement. They generally consist of a float attached to a rotary drum upon which a calibrated data sheet is attached. A timeclock-driven pen recorder moves across the drum scribing the stream level.

"Bubblers" are also used to measure level or stage. A tank of compressed air or nitrogen is used to release a constant stream of bubbles from the bottom of the control section to the free-water surface. The back pressure, as measured on a recording pressure gauge, is calibrated to the depth of water. Bubblers are also often used to keep track of water levels in deep wells where well 'drawdown' during use is of interest.

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Finally, adapting meters to sewers and the measurement of sewage flow are the most difficult metering tasks that a winery might encounter. A manhole is usually selected as the site for installing instrumentation. Stock items available for installation are so-called 'flumes' of various sizes, materials, and capacities that can be adapted to an existing manhole. A stage recorder or bubbler is needed for level measurement in the 'throat' of the flume.

Metering Pipes Flowing Full

A large number of devices capable of measuring flow are currently on the market and reflect the use of microprocessors and exotic physical phenomena like the Doppler effect or shift (based on the same principles as the sonic contraptions that 'ping' you when you are exceeding the speed limit and print out for the patrolman not only your velocity, but your height, weight, and sexual preference).

Without going into great detail about the function or relative merits of each device, there are several guiding principles that might govern your selection of one device over another:

Price The difference in cost from the simplest to the most complex meter with remote signal generation and recording capability (both of which can perform the same metering) is probably from 500–600%.

Reliability A unit with a pulsating transducer has a higher probability of malfunction than a simple oscillating disk-type meter.

Table I lists the many metering devices that are available. A manufacturer's representative should be sought by the winery to determine the best unit for the given metering application. Accuracy, limitations (if any), and flow range are necessary inputs before the selection is made.

Table I
Metering Choices for Pipes Flowing Full

1) Differential Pressure
   Orifice
   Venturi Tube
   Flow Nozzles and Tubes
   Pitot Tubes
   Elbows
2) Magnetic
3) Mass
   Coriolis
4) Oscillatory
   Vortex Shedding
   Fluidic
5) Positive Displacement
6) Target
7) Turbine
8) Ultrasonic
   Transit Time
9) Variable Area

Units of Measurement

Unfortunately, it appears that the U.S. experiment with conversion to metric units has been shelved. You are safe in selecting a meter for the foreseeable future that reads in gallons or acre-feet.

Just be glad that the wine industry does not have to deal with the 'miner's inch' in its flow measurement records and reporting. As defined, the miner's inch is the quantity of water that will flow through an orifice one inch square under a head of 4–12 inches, depending on the western state where the unit is defined (4 inches in Colorado and 12 inches in Nevada and California). Also, this bit of flow measurement trivia can produce a great trivia question: Is the miner's inch the same the world around?

David Storm is a consulting engineer and owner of Winters Winery, Winters, CA.

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> (Think of that, ye country cousins!)
> Stood of every growth and price,
> Peeping forth in tubs of ice."

Desirable cuvée chemistry includes a high titratable acidity (0.70 g/100mL or more), a low pH (less than 3.3), a low volatile acidity (less than 0.040 g/100mL), and a moderate alcohol level (between 10.0 and 11.5% v/v). The cuvée color is usually light, with a balanced fresh aroma and often with no single varietal character dominating. Wines with a low aldehyde, copper, and iron content are desirable. Additionally, wines with a relatively low phenolic content are recommended.

The goal is to have a cuvée that is delicate and clean (free from enological flaws), with structure to provide the framework for bottle bouquet. The base wine should be of low sulfur dioxide content (under 20 mg/L free SO_2) to help assure that the secondary fermentation will go to completion.

Prior to cuvée bottling, sparkling winemakers generally determine the extent of both potassium bitartrate (KHT) and protein stability. Both of these stability parameters can have an effect on riddling ease, bubble size, and bubble retention.

Potassium Bitartrate Stability

A *PW* survey of 18 sparkling wine houses indicated that the majority (16) utilize some sort of freeze test for determining KHT stability of their cuvées. There is a wide variation in the exact procedure utilized in the sparkling wine industry. This is not surprising in view of the fact that there is no industry standard for determining KHT stability. Sparkling winemakers, like table wine producers, set their own in-house freeze test standards.

A freeze test relies on the formation of crystals as the result of holding wine samples at reduced temperatures for a specified time period. Often a sample is frozen and then thawed to determine the development of bitartrate crystals and whether those crystals return to solution.

As ice formation increases, there is an increase in the relative concentration of all species in the sample, including alcohol, thus enhancing nucleation and crystallization. The freeze test is in reality a distorted crystallization-rate test (Boulton 1983). The freezing temperature of water is much higher than that of alcohol.

The result is that the water freezes while the alcohol does not, thus changing the relative concentration of the various wine constituents. Crystal formation will in part be a function of how fast the water freezes. It is difficult to accurately relate crystal formation in a concentrated wine sample with bitartrate potassium stability. The presence of crystals in a freeze test depends upon the rate of crystallization and time.

An additional variable is introduced if the laboratory sample is filtered. Many assume that it is desirable to laboratory-filter a wine prior to running a freeze test—simply because they know their wine will be filtered prior to bottling. Filtration of the laboratory sample will remove crystal nuclei which will affect test results. Unless one provides seed crystals (or doesn't lab-filter the test sample), precipitation over the short time pe-

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riod of the test is in fact a measure of the ability to form crystal nuclei.

Another problem with attempting to determine KHT stability by a freeze test is that the test does not take into account the presence of complexing factors (*PW* May/June 1986).

An electrical conductivity test is a much more accurate method of determining bitartrate stability. No sparkling wine producer in the *PW* survey reported using a conductivity test for determining KHT stability.

Several sparkling winemakers use a slight variation of the freeze test. Realizing that the *prise de mousse* will create anywhere from 1.1 - 1.5% additional alcohol (in mousseux production), they will fortify a small quantity of their cuvée and perform a freeze test on the fortified sample. Alcohol, among other factors, affects KHT precipitation. Fortification may be a desirable change to the freeze test procedure. The inherent problems of the freeze test (outlined above) still exist when the sample is fortified.

Protein Stability

All sparkling winemakers surveyed used a heat test procedure to determine protein stability of their cuvées. Once again, there appears to be no industry standard by which cuvée protein stability is determined.

Precipitation of protein is affected not only by the exposure temperature but also by the duration of heating. Since all cuvée proteins may be precipitated by heat, there are varying degrees of heat stability with regard to proteins. For example, heating a sample at 40°C for 24 hours precipitates about 40% of the wine proteins, whereas holding at 60°C for 24 hours precipitates 95–100% of the protein (Pocock and Rankine, 1973). The time necessary for haze formation decreased with increasing temperature.

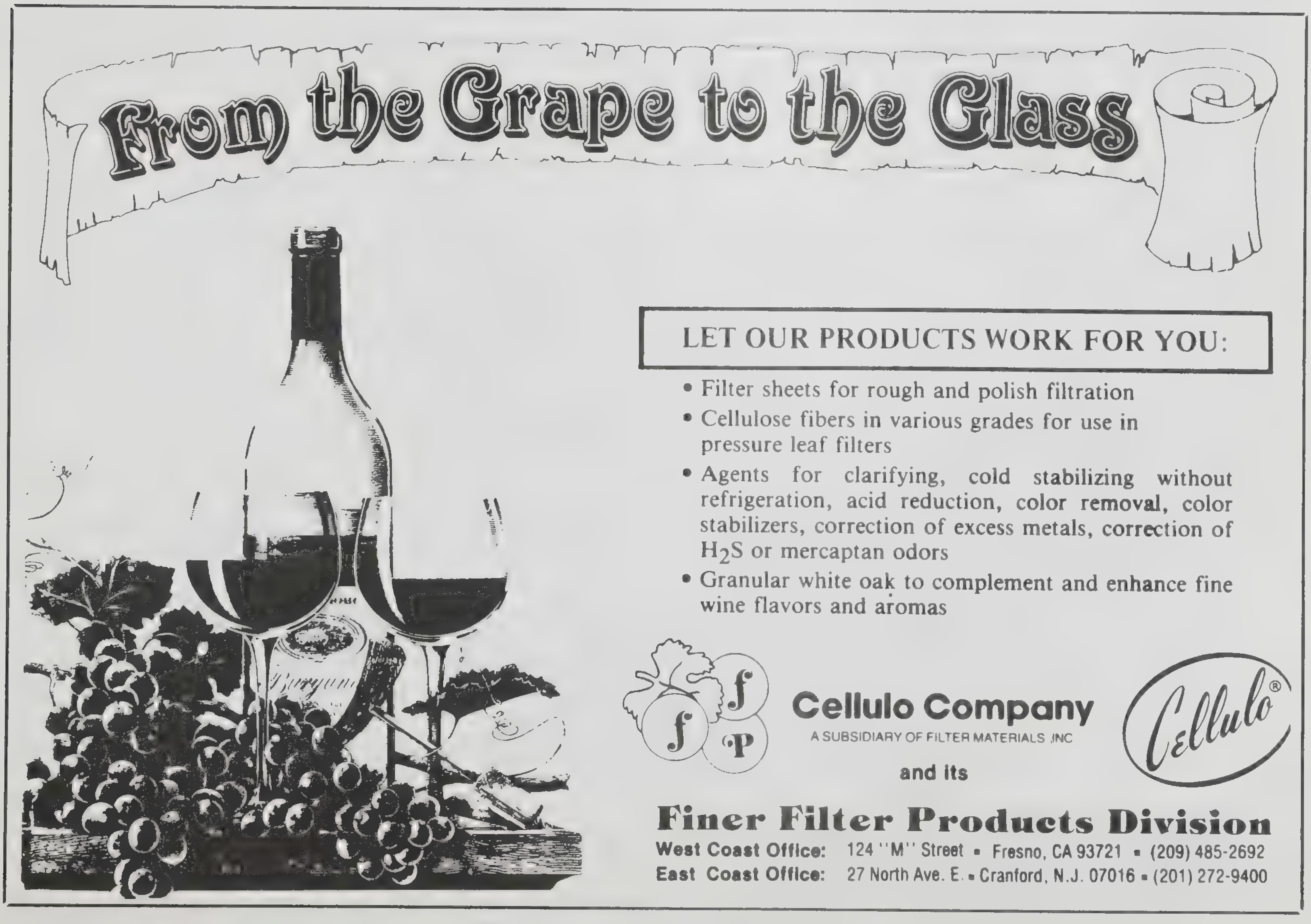
Several sparkling winemakers reported using a heat test and recommend chilling the wine sample following heat treatment. Visible haze formation is slightly greater than that seen in a sample without subsequent cooling.

Protein precipitation, like potassium bitartrate, is affected by alcohol. Again, several winemakers choose to fortify their cuvée blends by 1.1–1.5% alcohol in the laboratory prior to running a heat test. This is to duplicate the alcohol level which will be achieved in the bottle.

None of the common or uncommon protein precipitation tests were reportedly used by survey respondents. These tests include precipitation of protein using ethanol, ammonium sulfate, trichloracetic acid, phosphomolybdic acid, phosphotungstic acid, and tannic acid. Most of these precipitation tests are much more severe than heat tests—causing a denaturation and precipitation of all protein fractions. This may be the principle reason why none of the survey respondents reported using precipitation tests.

Protein has traditionally been regarded as only being related to wine instability. The sparkling winemaker must look beyond stability to the effects proteins have on bubble size, bubble retention, and foaming. Indeed, the influence of cuvée proteins, fermentation rate, and yeast autolysis products may be greater than that of such traditional parameters as alcohol, bubble size, retention capacity, and foaming.

All of the critical factors that influence bubble size have yet to be defined. Fermentation conditions and the concentration of nitrogenous compounds in the cuvée and as the result of yeast autolysis appear to play an important role.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It is suggested that the bubbles carry a negative charge and attract positively-charged particles such as proteins (Eschenbruch and Molan 1982).

It has been reported that an increase in protein concentration of 25 to 50 mg/L reduces bubble size in the finished product. Indeed, it has been determined that many of the premium Champagnes of France have a higher protein level than many sparkling wines produced elsewhere. This is believed to be the result of time spent *sur lie* as well as possibly cuvée nitrogen constituents.

It appears that controlling cuvée protein poses much more significance than simple stability. Sparkling winemakers must process their cuvée protein levels to obtain a product with minimum protein precipitation in the bottle while not detrimentally affecting carbonation. Gauging optimum cuvée protein is a matter of experience.

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Yeast Selection

For the secondary fermentation (*prise de mousse*), the selection of a yeast with the following attributes is desirable: pressure-, alcohol-, cold-, and SO_2-tolerant; doesn't produce SO_2; ferments to dryness; dies or becomes inactive following fermentation; is a low lipid producer; does not strain the wall of the bottle; has desirable agglutinating ability; produces no off-flavors or odors; and has a desirable effect on carbonation.

Because the demands on the yeast are very specific, the sparkling winemaker must be specific in yeast selection. For example, Chardonnay is sometimes difficult to ferment to dryness; therefore, a strong fermenter may be desirable. Some yeasts are very delicate, others assertive, regarding the character they impart to the sparkling wine. This is a stylistic consideration.

During yeast autolysis, intercellular activity causes changes in the cytoplasmic constituents, resulting in hydrolysis of proteins and peptides by various yeast proteases and peptidases.

Different yeast species and strains differ in the concentration of enzymes which can catalyze the production of alcohols, esters, acids, aldehydes, polysaccharides, lipids, and proteins. Yeast selection, therefore, can have a major effect upon style, carbonation characteristics and riddling ease.

Several 'champagne strains' of *Saccharomyces cerevisiae* and *S. bayanus* (formerly *oviformis*) have many of the above-mentioned properties. Some commonly-used yeasts for secondary fermentation are Champagne Epernay UCD 590; Prise de Mousse UCD 594; Prise de Mousse (Lalvan); Ay 1931 Champagne UCD 503; BYL UCD 505; Pasteur Champagne UCD 595; California Champagne UCD 505; CIVC #8130; Etoile; and Zymasil Bayanus.

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Prise de Mousse (Lalvan), is a highly-flocculent, fairly assertive yeast with good riddling ability (Bannister 1983). The Geisenheim strain of champagne Epernay does not produce SO_2 during fermentation, does not stick to the bottle, ferments at relatively low temperatures, and is sandy in its agglutinating ability (Becker 1978).

Both California champagne (UCD 505) and Pasteur champagne (UCD 595) are popular yeasts for secondary fermentation. Both are available in active-dry form. California champagne is a good flocculator which may be considered to be more delicate than Pasteur champagne.

At least one California sparkling wine producer uses mixed

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cultures for the secondary fermentation, believing that such a procedure adds complexity. Many sparkling wine houses employ their own proprietary yeast strains. New or prospective producers should do some 'in-house' experimentation to review the merits and deficiencies of different yeasts under their own conditions.

Sparkling wine yeasts are available on agar-slants, in liquid-culture and active-dry form. The yeast volume employed for the secondary fermentation is usually a 2–5% activity growing culture. Many traditional sparkling wine houses build up a yeast inoculum from slant cultures by either a step-wise volume increase or by the use of yeast generators.

Yeast preparation for bottle fermentation is of obvious importance. Some believe it desirable to culture yeast under stressful conditions (higher SO_2 levels, cooler temperatures, etc.) so that when the secondary fermentation begins, the yeast may be more vigorous. Others have expressed the desirability of conditioning the yeast to the same conditions (except CO_2 pressure) that will be found in the bottle. Research continues in this regard.

A common preparation method is given (Bannister 1983): 500mL of a solution of sterile wine (the cuvée to be fermented) and sterile water in proportion resulting in approximately 7% alcohol. To this, 5% sugar and 1.5 grams of yeast extract are added. This medium is inoculated from a slant yeast culture using strict aseptic techniques and incubated at approximately 80°F. When the sugar is half utilized, this is transferred directly into 1.5L of undiluted wine which has 5% sugar.

This is repeated, using a 10% inoculum, into a new wine volume which has 5% sugar added. Transfers are made at 2.5% sugar. This is repeated again until a 5% inoculum volume has been produced (5% of the cuvée volume which is to be fermented).

Care must be taken not to allow the culture to go to dryness prior to transfer because the alcohol level will increase and begin to inhibit the yeast. When all the sugar has been depleted in the medium, the yeasts rapidly begin the death or decline phase. Additionally, during the transfers, it is desirable to go from initial incubation temperature to the temperature at which the cuvée will be bottled.

Optimally, the producer will examine his starter culture to be assured that the culture is actively growing. A large percentage of budding yeast (70–80%) is desired. It is essential that the culture be free of contamination. To insure secondary bottle fermentation, a minimum of 1 million cells/mL should be added to each bottle (Geoffroy and Perin 1965). An actively-growing culture is usually about 1–2 x 10^8 cells/mL.

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LOGIC BEHIND WINE SAUCES

Thomas J. McCombie
Chez TJ, Mountain View, CA

Notions of wine and food are inseparable, and perhaps nowhere is their marriage more appropriate and pleasing than when pairing food with wine sauces.

The wine-drinking public has given much thought and lip service to selecting the proper wine with the 'right' food. Largely, the 'correctness' of these matings is a matter of personal taste, experience, and subjective analysis. Extending the concept of complementary wine and food flavors, it is logical to assume that certain foods will benefit from sauces created with specific wines. In turn, these dishes would be enhanced if accompanied by the same or similar wines as those used in the sauce.

Too often, wine, when used in cooking, plays only a minor role, frequently losing varietal qualities in the finished product. By creating a concentrated essence of the wine and mounting it in butter, a sauce can be achieved that not only complements food, but also the accompanying wine.

Acid Enhances Flavor

When tasting wine for itself, the careful taster makes a mental note of its characteristics—sugar content, acid, tannins, and body. When choosing a wine for a sauce, the same considerations should be made. As a rule, the more complex the base wine, the more complex the finished sauce. The process of reduction necessary to create the wine essence magnifies the properties of the wine. Sweet wines become even sweeter. Acidic wines become more so, and thin wines often leave little hint of their origins.

Acid plays an important role in both the taste and body of the finished sauce. First, just as acid helps to provide depth of taste to the bottled wine, so it does in the sauce. Acid is one of the basic taste zones of the human palate. The presence of acid in the finished sauce provides more stimuli to our palate, and the final impression is that the sauce has more flavor.

Second, when softened butter is whisked into a warm wine essence, the concentrated acid acts on the milk solids in the butter to form an emulsion. Instead of melting into oil, the butter is held in suspension. The result is a rich, smooth sauce of medium body with a pronounced wine flavor. Therefore, when selecting a base wine, choose one on the basis of its acid content. For white wine sauces, Sauvignon Blancs and Chardonnays seem to provide best results, because of their strong varietal character.

Acid, while a necessary component in the sauce-making process, does have its deficits. Sometimes a finished sauce tastes too sharp. Salt is chemically the opposite of acid, and the addition of a little salt will balance the taste of acid in a sauce.

For example, in the recipe which follows for catfish with rosemary and Sauvignon Blanc, I would choose a wine with pronounced herbal characteristics, and high in acid. The herbal qualities of the wine are an excellent complement to the rosemary, and the acid content provides a sauce with ample body.

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On the other hand, very sweet wines, such as Sauternes, port, and sherry, produce sauces with good body and pronounced flavor due to the high sugar level in the wine. In a sense, when reducing these wines, the effect is much the same as for boiling a sugar syrup. If allowed to reduce completely, they would caramelize.

The recipe for goat cheese, port, and pink peppercorns which follows is a good example. In this case, not only does the port produce a sauce of excellent body, but the rich, deep-red color is not affected by the incorporation of the butter. The resulting sauce retains the brilliant red, almost purple quality of the base wine.

Other Elements to Consider

Body is another important consideration when choosing a wine for a sauce. Deep, heavy red wines, such as some Zinfandels, and the port as mentioned above, not only produce a thicker sauce, but also one richer in color. Conversely, light-colored reds, such as some Burgundies, seldom make sauces with much eye appeal.

Also consider the tannin level in a wine. Just as wines very high in tannin are not pleasant to drink, so is this effect exaggerated in a sauce. Instead of richness and body, the result is bitterness.

Following is a selection of recipes illustrating some of the many effects specific wine varietals create when reduced and mounted in butter. The Sauvignon Blanc sauce for the catfish could be considered a standard white wine sauce. It has definite varietal flavors, and enough acid to make a sauce of sufficient body.

The port dish is an exceptional example of what both sugar and wine color reflect in the finished sauce. The sherry sauce in the recipe of filet steaks with sherry and black pepper uses the flavors and sugars from the base wine. In addition, it is a good example of what happens when the wine flavors interact with the strong and competing flavors of the pepper and garlic.

In a sense, these sauces are extensions of the classic beurre blanc. The result is not just another wine sauce, but a sauce that truly reflects, as well as complements, the base wine.

Catfish Filets with Rosemary and Sauvignon Blanc

2 c. dry Sauvignon Blanc
1 T. minced shallots
1 T. sherry vinegar
1 T. whole rosemary leaves
½ lb. butter
Salt and white pepper to taste

Reduce the wine with shallots, vinegar, and rosemary to ½ cup. Over moderate heat, whisk in the butter. Adjust the sauce to taste with salt

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and ground white pepper. Meanwhile, sauté the catfish filets.

12 catfish filets
1 c. cornmeal
Salt and white pepper
Oil for cooking
Sprigs of fresh rosemary

Dredge the filets in the cornmeal, and season them lightly with salt and pepper. Heat the oil in a large sauté pan. Cook the filets two minutes on the first side and one minute on the flip side. To serve, divide the filets among 6 serving platters and spoon the sauce over each portion. Top with sprigs of fresh rosemary. Serves 6.

French-fried Goat Cheese with Port and Pink Peppercorns

8–⅓″-thick rounds of Montrachet goat cheese (white or black)
½ c. pink peppercorns
1 c. flour
2 whole eggs beaten with 2 t. water
1 c. fine bread crumbs

Press a teaspoon of the pink peppercorns into each side of the cheese. Dredge the rounds in the flour, egg, and bread crumbs. Refrigerate for at least one hour to firm them.

For the sauce:
3 c. rich red port
1 shallot, finely minced
⅓ lb. softened unsalted butter
Salt and white ground pepper to taste

Reduce the port with the shallot to ½ cup. It should be very dark red, and have the body of a light syrup. Whisk in the softened butter and season the sauce with salt and white ground pepper.

To cook the cheese rounds:
A french fryer with at least 2 quarts of oil
The warm sauce

Heat the oil to 325°F. Drop in the rounds. Cook them until they begin to turn golden brown (about two minutes). With a spoon, turn them to cook on the flip side. Remove and drain on a paper towel. Divide the sauce among 8 small serving plates. Place one round in the center of each plate and serve immediately. Serves 8.

Filet Steaks with Sherry and Black Pepper

6 trimmed filet steaks weighing 4–5 oz. each
¼ c. crushed black peppercorns
Salt

Lightly pepper the steaks on both sides, using about ¼ teaspoon of pepper per steak. Set steaks aside.

1 lb. whole garlic heads
2 c. good cream sherry
3 c. rich beef stock
Salt

Break up the garlic heads into cloves, but do not peel them. In a large saucepan, cover the garlic with the cream sherry and beef stock. Simmer slowly, uncovered, for one hour. Pour the garlic through a strainer and return the cooking liquid to the stove; reduce to 1½ cups. Season the stock with salt and set it aside.

The reserved garlic
½ c. cream
Salt

Allow the garlic to cool, and squeeze the garlic from the skins. Make a smooth purée of the garlic. Add the cream to make the purée a moderately thick liquid. Season it to taste with salt. Set aside until you are ready to cook the steaks. While cooking the steaks, gently rewarm the garlic purée.

⅓ c. cooking oil
The steaks
The stock
The purée
The crushed pepper

In a large sauté pan, heat the oil over moderate heat until hot. Add the steaks and sauté them for two minutes, then turn them, and continue to cook them for about three minutes more for medium-rare. Remove the steaks and hold them warm.

Pour the fat from the pan. Add the stock, and scrape the pan to incorporate any cooking juices from the steaks. Whisk in ½ cup of warm garlic purée. Place each of the steaks in the middle of a warm serving plate. Spoon enough of the stock around the steaks to form a shallow pool. Spoon about 2 tablespoons of the purée over each of the steaks and sprinkle the top of each steak with crushed pepper. Serves 6.

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All-Ohio Wine Lists Increase Profits

Jane Moulton

Lack of availability, information, and restaurateur interest has kept Ohio wines off of most Ohio restaurant wine lists, even those with menus oriented toward simpler, more basic fare which would profit from some of the unique wines which Ohio winemakers do well.

That may now be changing. There are two restaurants with popular and profitable all-Ohio wine lists, and if the Ohio Wine Producers Association (OWPA) continues its successful promotion, there will be more forthcoming.

Improved Wine Quality

Ohio wine quality has grown far faster than its reputation. In the last 15 years, but particularly the last three years, wineries have made tremendous progress with classic *vinifera* grapes as well as with French-American hybrids, and although obvious to the trade, most consumers remain unaware of the changes. In addition, little notice has been given to the increased quality in some *labrusca* wines from Delaware, Catawba, and other grapes.

A few of the more progressive wineries are using modern technology on native American grapes, which still pay the rent for most Ohio wineries. They and some of the new hybrids also go well with the old-fashioned ethnic dishes which are still in demand in Cleveland's ethnically-diverse neighborhoods—dishes such as wienerschnitzel, sauerkraut with kielbasi, and Italian sausage-seasoned pasta sauces.

Despite increased quality and food compatibility, finding Ohio wine in most restaurants has been nearly impossible. Part of the problem has been difficulty in distribution from small wineries without wholesalers.

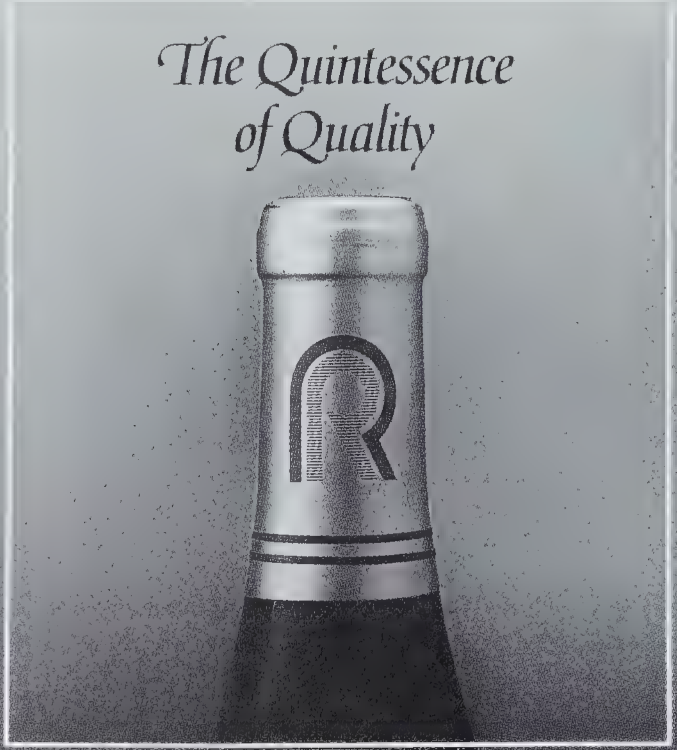
A new OWPA program designed to solve problems and help wineries to push Ohio wines in restaurants is proving profitable for both wineries and restaurants. For at least two restaurants, a recent switch to all-Ohio wines tremendously increased wine sales. The fact that the wines are otherwise difficult to obtain (due to scarcity in retail outlets) may be partially responsible for the success.

Converted Wine List at Mr. Z's

Mr. Z's, well-regarded on Cleveland's west side, was the first restaurant in the state to market an exclusively-Ohio list. The promotion started in June, 1986, and has continued strong ever since, although in the beginning the concept was considered only experimental.

The only out-of-state wines are the house wines from California—Beringer white Zinfandel and Giumarra chablis, burgundy, and rosé—which sell for $1.50/glass, $2.95/half-carafe, and $4.95/carafe. Manager Michael Zappone retained the Giumarra because of lack of an Ohio product in casks. Wine is delivered to the bar by hoses from casks in the basement, and he did not wish to give up that arrangement. All white wines are stored at 42°F and reds at room temperature.

When Mr. Z's converted its list from a potpourri of wines from the U.S., France, Germany, Italy, and Portugal, it attracted media as well as public attention. Mr. Z's has been in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A spotlighted arrangement of Ohio wines available at the Ashtabula Holiday Inn greets customers as they arrive.
(photo by Cass Moulton-Arble)

business since May 1982, but the Zappone family has owned successful restaurants in the Cleveland area since 1929. Jeanne Zappone is president, sons Michael, Jr., and John manage the front of the restaurant and the kitchen respectively, and Michael, Sr., now retired, acts as adviser.

The restaurant seats 180 people (250 banquet-style), and the decor reflects the family interest in the community, with old photographs of famous Clevelanders and landscapes of former eras adorning the walls. Because of the local focus, Michael, Jr., thought Ohio wines would be appropriate.

They have been, both for customers from the immediate area and those who come from a distance. Mr. Z's is in a working-class neighborhood of eclectic ethnic backgrounds, but it is easily accessible via two interstates to downtown—which supplies a good share of luncheon business—and to suburban areas.

"At first, some of our customers snickered about all the Ohio wines when they looked at the wine list," says Jeanne Zappone. "Frankly, I snickered, too. I hadn't tasted any Ohio wine in a long time." Ohio wines have worked well, however. Wine sales have increased 70–75% since the all-Ohio list was put in.

In December, 1986, a new wine list was introduced which dropped some of the originals and added new offerings of the same general type. The list, however, is still exclusively Ohio, with 27 wines from seven wineries.

"We tasted a lot of wine before we decided on the first list," explains Jeanne Zappone. "Our employees assisted in the tasting and selection, and they also took part in formal tastings put on by OWPA. We took them to visit two wineries—Lonz, on Middle Bass Island, and Firelands, near Sandusky—to give them a family-type interest in selling wine." The staff includes 75 people, some of whom have been with the family business for 24 years. Turnover is low, but new additions will attend future OWPA training-tasting sessions.

Customer Support for Local Product

The menu does not recommend specific food and wine combinations. Instead, the waitperson will ask patrons who seem stumped at making a wine selection if they prefer sweet, dry, or off-dry, red, white, or rosé.

"We try not to intimidate our guests, but if we are asked for suggestions we will offer them," says Jeanne Zappone. "People will try simple Ohio wines when they would be afraid to ask for fancy wine. Ohio wine is part of them, and if it tastes good, that's all they want.

"This is a neighborhood where people do not stick up their noses. Many came from farms where they made their own wine, so some of the Ohio wines taste familiar to them."

The menu is as eclectic as the customers' ethnic backgrounds. It includes steaks, prime rib, veal, and seafood, plus specials on stuffed cabbage, stuffed peppers, meatloaf, and lasagna. There are Ohio wines appropriate for the whole range of foods and a wide range of wine preferences.

Some particularly good potential pairings include Riesling or semi-dry Seyval Blanc with stuffed cabbage, white Baco Noir with lasagna, and red Baco Noir with meatloaf or steak. Ohio Cabernet Sauvignon is finally beginning to come into its own and tastes as good with steak as Cabernets from California and Europe.

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The wine list, which includes short descriptions of the wines, remains on the table, so there is plenty of time for making a decision. The list is broken down into white, rosé, and red, plus ports and sherries by the glass, wine coolers, and non-alcoholic beverages. One champagne and some sparkling and still juices are sold in splits; the remaining still and sparkling come in 750mL bottles.

Included are not only the *vinifera* grape varieties usually found on restaurant wine lists, but also those made from hybrid grapes such as Seyval Blanc, Vidal Blanc, and Baco Noir. Some of these are finished with a touch of sweetness, which makes them more appealing to a novice wine consumer. There are also a few wines from native American grapes, with generic and proprietary names.

Prices for a 750mL bottle range from $6.00 for Lonz Sailor's White or Lonzbrusco in red or white to $12.50 for Lonz Isle de Fleur Champagne, but most are in the $6.50–$8.00 bracket. Pricing is compatible with prices of entrées, which start at $4.50 for Grandma Zappone's spaghetti (a 60-year-old traditional recipe) and go up to $12.50 for a dinner special. However, they bunch in the middle at $5.95 to $10.95.

With an Ohio wholesale price of $1.79/bottle on the Sailor's White, $1.33 on the Lonzbrusco and $4.99 on the Isle de Fleur Champagne, profit margins are excellent while the price to the customer remains attractive. Profits go even higher on the wine-by-the-glass specials of wines selected from the wine list, of which there are always three to six that range in price from $1.50 to $2.75. Specials are announced on table tents.

"This is a wine-by-the-glass restaurant," points out assistant manager Richard Crawford. "People will buy four or five glasses and never consider buying a bottle.

"The Ohio wine list is fabulous, but I did have reservations in the beginning because I hadn't tasted Ohio wines for many years. There is still a little customer resistance to Ohio wines. When they think they won't like it, I offer them a taste, and 99.5% of the time they wind up buying."

Combining Restaurant and Retail Sales at Heritage House

The Heritage House Restaurant in the Ashtabula Holiday Inn features an all-Ohio wine list. It is located in rural Austinburg just off the route from Cleveland to Erie, PA, and Buffalo, NY.

The restaurant attracts visitors to the seven Ohio wineries and several Pennsylvania wineries in the Lake Erie Viticultural Area, where the restaurant is located. The restaurant has become a convenient place for local winery and vineyard personnel to eat and taste competitors' wines.

Because the restaurant also holds a carry-out permit, winery visitors find it a handy place to pick up a variety of area wines to take home. Ohio wines in retail stores are about as scarce as they are in restaurants, so provision for retail sales is a convenience for the customers as well as adding to profits.

Heritage House went exclusively with Ohio wines in August 1986, and by the end of the year wine sales were up 450%, according to former food and beverage manager Donald Jozwiak, who also attributes most of the 20% increase in profits for the entire food and beverage operation to the new wine list and to the customers it attracts.

Jozwiak recently became food and beverage manager of Holiday Inn Westlake, a western suburb of Cleveland, where he intends to initiate another Ohio wine list.

The Ashtabula dining room is formal, with linen tablecloths, candles, water goblets, and wine glasses on the tables. There is a spotlighted multi-level display of all the available wines at the dining room entrance.

Effective Sales Techniques

Other than an enthusiastic, trained waitstaff, the best sales promotion comes from an attractive wine list consisting of 24 wines from 11 Ohio wineries in a bound 8½" x 11" book. Each page contains a wine label, the vineyard name, the area in which the grapes are grown, and a brief description of the wine and winery, plus, in some cases, information about visiting the winery.

Jozwiak reported that most customers spend considerable time reading the wine list and are frequently tempted to order several varieties by the glass just to explore the differences. All wines are offered by the glass at $2 per 5-oz pour, including champagne. According to Jozwiak, in four months only two bottles were wasted, disproving the frequent reason given by restaurateurs for limiting sales to full bottles. At five pours/bottle, profits are higher on wine sold this way.

Bottles are priced at double wholesale, which equates to 50% over retail price. Retail prices stay quite uniform throughout the state because of minimum price regulations in Ohio. Prices on the wine list are moderate, with only three wines as high as $9.00 and the rest between $6.00 and $8.00, quite compatible with entrée prices, which range from $7.25 to $ 11.95, with the majority between $8.00 and $9.00.

The menu is varied—nothing out of the ordinary—with basic steaks and seafood. Specific wine recommendations are not included on the menu, but when asked, the waitstaff makes suggestions based on their own tasting experiences. There was an in-depth training program by OWPA when the Ohio wine list was implemented which will be repeated every six months, which should be adequate for the low staff turnover.

The training program included all the service personnel and hostesses—anyone who is likely to get a question about wine. As a result of the training, the waitstaff is proud of the local connection with the wines and not afraid to make suggestions

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when it seems prudent. In addition, the waitstaff has benefited from increased tips.

OWPA Support

Doniella Winchell, executive secretary of OWPA, said the organization is encouraged by the results of the two all-Ohio wine lists and is working on other restaurants. OWPA has funding of $5,000 from the Ohio Grape Industries program, an adjunct of the Ohio Department of Agriculture, to assist five target restaurants throughout the state, with room for an additional seven if interest demands it.

The fund is supported by an Ohio tax of three cents/gallon on wine. The money is placed in a separate fund and used for marketing improvements and for grape product research which includes jellies, jams, and other products as well as wine. It funds research for viticultural projects and wine production research. Funds for assisting restaurants with Ohio wines comes from the marketing budget.

The object of the restaurant fund is to give staff training and management tastings to restaurants with a substantial commitment to Ohio wine. Training sessions involve a representative from OWPA plus one or two people from local wineries. Only wineries willing to service the restaurants are included on the wine list. This might include either quick personal delivery or immediate shipping by commercial shippers when necessary.

"We will have a manual for proper wine service. We want to increase waitstaff awareness with Ohio wines, including an involvement in regional pride. We focus on the fact that wine sales increase their total ticket and consequently their total income," said Winchell.

OWPA has several promotional pieces available for Ohio restaurants, including wine list folders and table tents, many with the 'Ohio Wine Naturally' logo. The restaurant promotion is complemented by a tasting program of Ohio wines donated by participating wineries. The promotion is available to organizations for a modest fee per person to cover the cost of cheese and a speaker.

Summary

Both Mr. Z's and Heritage House sell far more *vinifera*—mainly Chardonnay, Riesling, and Cabernet—wines than either hybrid or *labrusca* varieties, but customers who enjoy the *labrusca* flavors are delighted to have them available. Hybrid varieties at present do not have the name recognition enjoyed by the classical grapes, but Baco Noir, a robust red hybrid wine, has caught on well at Mr. Z's—the restaurant sells increasingly larger amounts as more people taste it.

Certainly a recent increased appreciation for local products has spurred restaurant sales of wines produced in the area and contributed to the success of the all-Ohio lists. However, there remains a critical need for outlets for local wines, not only in Ohio but in other states which produce wine which is difficult for the public to discover.

Present consumer interest should increase as restaurateurs provide opportunities for learning more of the now-unfamiliar varietal names, the wine styles, and the foods they complement. A trend toward offering at least a few local wines on every wine list around the country should add vitality to the American wine industry and spark the interest of travelers as well as local residents.

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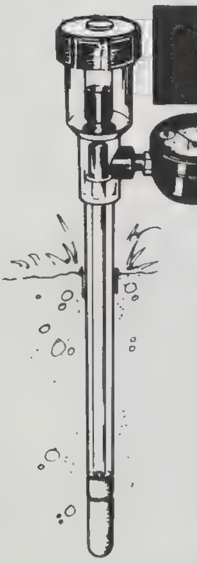

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If you are planning to build a new winery, expand an existing one, or are experiencing any type of electrical problems in your winery, please read on.

In more than 20 years of experience in the wine industry, I have found that the subject of electrical power distribution within a winery is one of the least understood and one of the last design items to be considered.

Proper planning, even rethinking of your existing system, is critical because, of all the utility systems in the winery, none is more important than the electrical system. The following reasons demonstrate this.

1) No other utility system failure within the winery will so completely bring you to a halt in production quicker than an electrical system failure.

2) No other utility system in the winery has the potential to threaten the safety of your personnel and property like the electrical system.

3) No other utility system failure in the winery is more difficult to troubleshoot than the electrical system.

4) It is more difficult to find skilled maintenance help for the electrical system than for any other utility system in the winery.

Electrical Service Site

One of the first steps in planning a new winery or expanding an existing one should be a discussion with the serving utility. Discovering that the utility cannot supply you with a transformer for nine months is a surprise you don't need six months before you hope to operate. Finding out that the utility will have to rebuild its electrical distribution system to serve your load and that it could take a year or more is important to know for your planning.

Even smaller challenges can disrupt your plans. It is important to find out from what location the utility will be able to serve your property. The basic rule in northern California's PG&E system is that they will provide the first 100 circuit feet on your property at no cost; beyond that, you will pay them the cost for materials and installation. If you are a long way from their distribution system, that can be significant to your budget.

In some areas the utility is restricted from providing overhead line extensions. If you have to meet them underground, generally you must provide the underground conduit from the transformer site on your property to the property line. This 'primary' underground work, including trench, conduit, pull boxes and transformer pad, must be supplied and installed by the property owner to the utility's specifications. In addition, the property owner must provide and install the 'secondary' conduits or bus duct from the transformer to the main service switchgear.

Location of Utility Transformer

In general, the most concern given to location of the utility transformer is centered around finding a spot where it will be out of the way and least noticeable. Try to locate it in the area where the majority of the load will be. In a winery, that is generally in the crush/pressing area, or it could be where the majority of the refrigeration equipment will be located. Ideally, a location central to all those loads would be best. There are two principal considerations:

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An electrical service should be located where physical expansion can take place in the future, as shown at Robert Mondavi's Oakville winery. Adequate access and working space are also important site considerations.

1) The service transformer must be located so that the utility has access to it after installation. In general, this means that there must be at least two feet clear on the sides and rear, and eight feet clear in front. (Caution—the clearance dimensions increase when the transformer is located close to a building.)

2) The transformer should be located as close as possible to the main service switchboard to keep the secondary conductors or bus duct length as short as possible. This circuit is the most costly per foot in the system, since it must carry the full winery load. Therefore, it is in your best interests to keep it as short as possible.

Sizing Main Service Switchboard

Incorrect main switchboard sizing is the second most common mistake in both new and old wineries. This is one area where you should be fat. In this case, fat is beautiful. The initial cost of being fat is indeed small compared to being thin in the future.

The only difference in cost between a 1,000-amp and a 1,600-amp service switchboard is essentially the cost of the main disconnect device and the size of the bus bars, regardless of the service voltage. If, however, you have to replace the 1,000-amp service five years later with a 1,600-amp service, you are looking at major bucks and down time, and you have to discard a 1,000-amp service switchboard.

The largest pad-mounted transformer which PG&E will install has a capacity of 2,500KVA. This equates to a maximum service switchboard rating of 4,000 amps at 480 volts, 3-phase. A winery would have to be producing a million or more cases/year to require a service of this size. Choosing a system voltage is somewhat dependent on your initial load and any near-future load. The serving utility will have some input concerning this decision. Basic rules of thumb for estimating loads with which to size your service equipment are as follows:

When planning, figure your initial horsepower (motor loads) at 1.5 amps/hp for total connected loads that do not exceed 500hp and where most of the load consists of small motors (25hp and less), or 1.3 amps/hp for total connected loads greater than 500hp and where the motor mix includes motors larger than 25hp. Estimate lighting at 0.0036 amps/sq.ft., and

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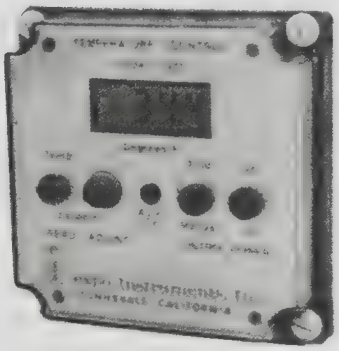

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These figures assume operation at 480 volts. If your system is 240 or 208 volts, multiply your total calculated loads by the ratio of 480/240 or 480/208 respectively. The sum of your load calculated in this manner will give you a rough idea of the minimum size service in amps. An example might be as follows:

Assume: A small winery–12,000–20,000 cases/year;

–8,000 sq.ft. of building, including about 1,000 sq.ft. of office;

–212 horsepower connected with the largest motor load–a couple of 20hp refrigeration compressors (about 25 tons of refrigeration);

–service voltage will be 480 volts, 3-phase.

Motor loads: 212hp x 1.5 amps/hp = 318.0 amps
Lighting: 8,000 sq.ft. x .0036 amps/sq.ft. = 28.8 amps
HVAC (office): 1,000 sq.ft. x .0072 amps/sq.ft. = 7.2 amps
Estimated total = 354.0 amps

The minimum service size based on this rough calculation should be 600 amps at 480 volt, 3-phase.

A 400-amp service selection would not leave any room for growth, and the rules of the National Electrical Code essentially say that the total demand load should not exceed 80% of the rating of the service switchboard. A 600-amp service, for example, should not be continuously loaded with more than 480 amps (600 x 0.8).

Connected Load and Demand Load

Some terminology with which you should become familiar involves the concept of 'connected load' and 'demand load'. Connected load is simply the nameplate load rating of every piece of electrical equipment that is connected to the system. It is computed by adding the motor loads, lighting loads, and any HVAC loads within the facility.

In a proper electrical design, this figure is finally accurately arrived at as the design engineer calculates the load on each motor control center (MCC), distribution and lighting panel. It falls out at the end of the design phase, so to speak. It's a very important figure for future planning.

Demand load is also a very precise figure, but it is measured rather than calculated. Let's say you are in the middle of harvest and almost everything in your plant is running. You can imagine the scenario where, even though all of your motors are running, they are not likely all to be fully loaded at the same time. So the actual demand your system is calling for is somewhat less than the total connected load.

The utility measures this load so that they can bill you for it in the demand portion of their rate schedule. This portion of the utility bill pays them for their investment in facilities in proportion to how much you are 'demanding' from them.

If you know your connected load and the maximum demand your system has created in the past year, you can develop the most valuable tool for future planning of your electrical facilities–your 'demand factor'. The demand factor is calculated by dividing the demand load by the connected load.

Knowing your demand factor allows you to estimate the effect additional loads will have on your system. It's the demand load that determines how much capacity you have available. A

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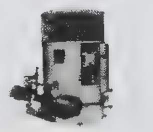
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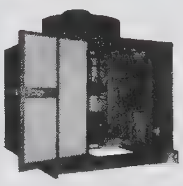
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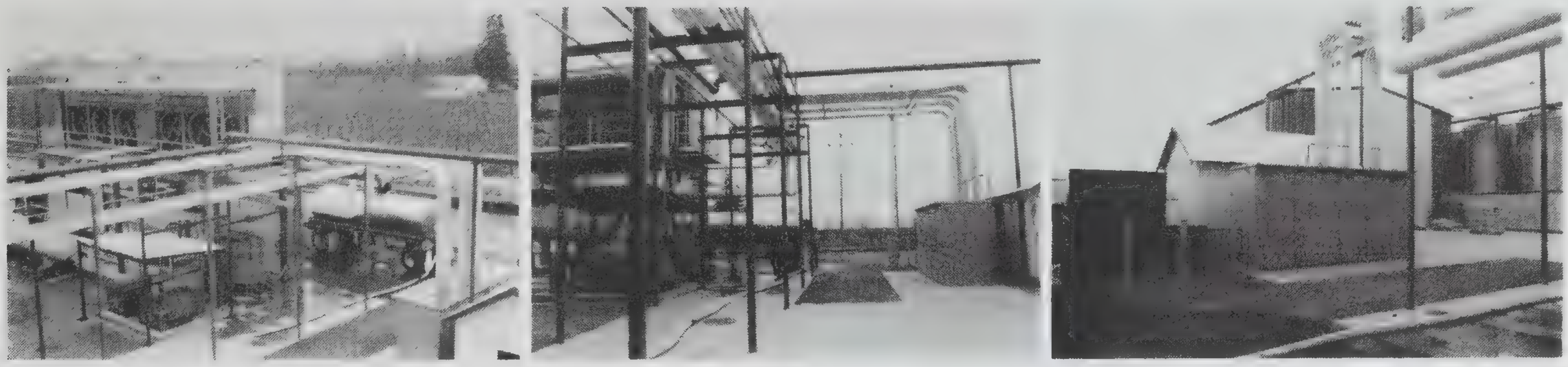

Locating the electrical service as close as possible to the main winery refrigeration reduces the cost of getting power to the largest load in a winery, as shown at Robert Mondavi's Woodbridge winery (l). Leaving enough room to physically expand the main service switchboard is good planning, as illustrated by this 4000A service (c). This 4000A service panel was located as close as possible to PG&E's transformer to keep the extensive 4000A bus duct as short as possible (r).

San Joaquin Valley, CA, winery has an electrical system with an (800-amp rating) motor control center (MCC) that accommodates the loads for the crushing and pressing operations. By code (N.E.C.), the winery was only allowed to load that MCC to 80% of its rating, or 640 amps of demand, not connected, load.

Prior to the 1986 harvest, the MCC had a connected load of 957.7 amps and a recorded demand of 500 amps, which was a 0.52 demand factor. There were 140 amps of capacity left on this MCC (640 amps maximum – 500 amps demand = 140 amps remaining capacity).

The winery wanted to add 155 amps of connected load. Loads added to this MCC historically create a demand that is only 52% of the connected load. This load could easily be added to the existing MCC without exceeding its 80% maximum load capability (155 amps x 0.52 demand factor = 81 amps estimated demand). Without this information, the owners of this winery probably would have purchased another motor control center as soon as their connected load exceeded the capacity of the original MCC.

The same philosophy applies to the electrical service and other load centers within the winery. Knowing your demand factor allows you to make intelligent decisions about whether or not you need to purchase additional equipment for load additions or how and where to add loads to your existing system.

Main Service Switchboard Location

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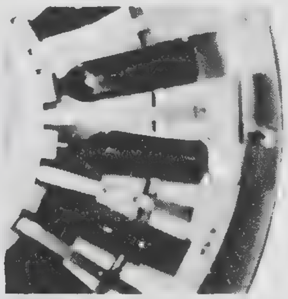

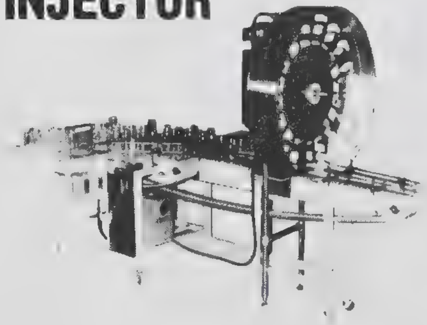

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90 bpm	3.3 sec.	2.2 sec.

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Bottles are air rinsed for 2-45° long segments while inverted. From 10:00 to 2:00.

Inert gas is then injected while bottles are still held up in rinse tubes from 2:30 to 4:30.

Bottles drop away from tube and onto the filling line conveyor.

IMPORTANT FEATURES
- Line space of only 25" to 40" depending upon line speed.
- All stainless steel and plastic construction.
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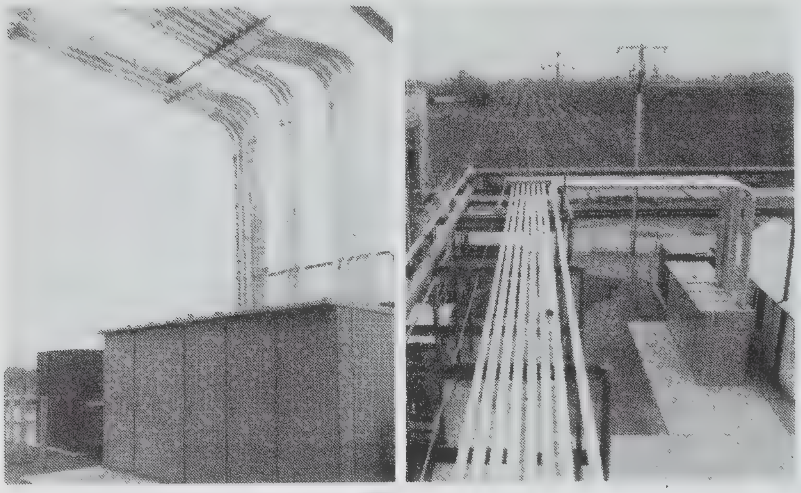

Locating the main service switchboard so there is access to it via a pipe rack allows for the easiest and least cost addition of future circuits, as done at Robert Mondavi's Woodbridge winery.

board at the facility. This has been done incorrectly many times. Some important items to consider in the placement of your main switchboard are as follows:

1) The cost of feeders at 480 volts is much more expensive than the cost of the primary (12,000 volts or more) feeder to the utility transformer. You would want to locate the main service switchboard and utility transformer as close to major load areas of your facility as possible.

2) The main service switchboard should be in a location where it is easy to install initial and future feeders. In several large winery facilities, the main service switchboard is located on the edge of the property and the initial conduits are installed underground. The underground circuits are very expensive because the main service switchboard is a long way from the load. The underground circuits are virtually inaccessible in case of trouble, and it is nearly impossible to add underground circuits in the future.

I would always recommend that the main service switchboard be accessible from an overhead pipe rack. This allows the initial circuits and the future circuits to be installed at the lowest possible cost. There are many ways to make this type of installation aesthetically pleasing.

3) The main service switchboard should be in a location where it can be physically expanded. In dozens of installations, the main service switchboard is crammed into a corner. While there is plenty of electrical capacity, there is no physical room left to expand it. This is a very costly error and greater care should be given to the location of the main switchboard.

4) Should the main service switchboard be located indoors or outdoors? The additional cost for installing it outdoors is relatively small. An outdoor location usually provides better access and expandability. If the switchboard is installed indoors in a washdown area, it should be provided with the same enclosure you would use outdoors, so the cost is essentially the same in both cases. Indoor floor space is usually at a premium, and this is generally why a service switchboard ends up in a corner, or surrounded by other equipment, which restricts any expansion.

Ken Arthur will continue his series to help winery personnel become more aware of the decisions important to an in-house electrical system. His next column will look at other considerations for the main service switchboard, location of sub panels and motor control centers, and feeder considerations.

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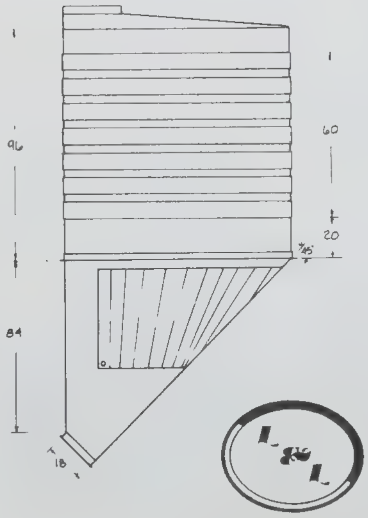

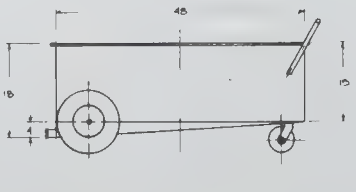

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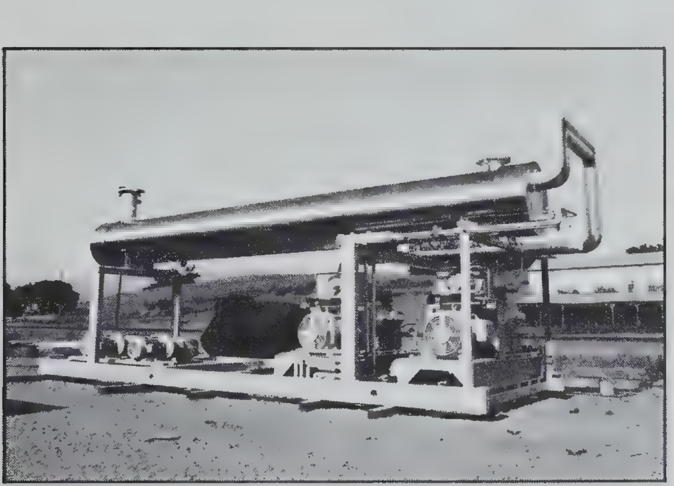

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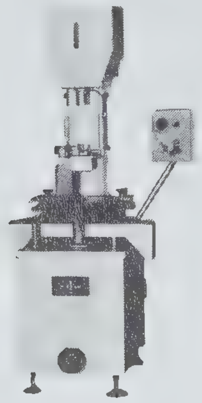

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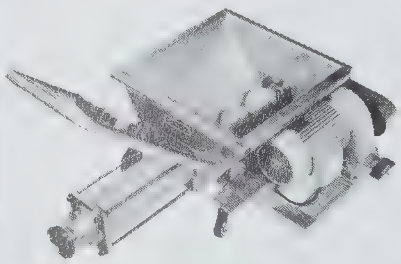

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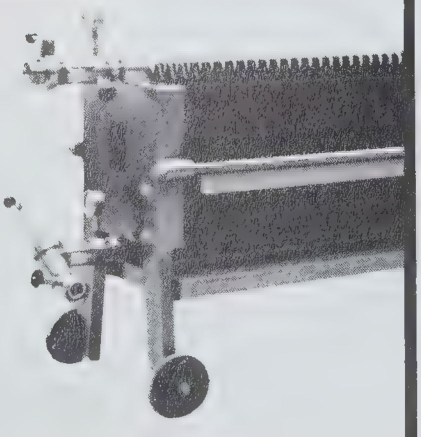

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Tasting Rooms Encourage Wine Sales, Part I

Diane W. Mayfield

Wineries are notoriously capital-intensive; many years may pass before owners begin to see any return on their original investment. Adding a tasting room to the facility involves an even further expenditure. Yet many wineries find that such an expenditure pays off in the long run. Successful wineries use a variety of techniques to make their tasting rooms cost-effective. *PW* will explore these techniques in several reports on successful tasting rooms. This first report focuses on tasting rooms in the Napa Valley, CA.

Winery-Direct Sales

Wineries make a dollar on every dollar received in the tasting room. This is in contrast to wines sold to wholesalers or distributors, on which the winery may make only about 50 or 60 cents on the dollar.

One winery which carries this idea to its logical extreme is V. Sattui in St. Helena. V. Sattui sells almost 100% of its 18,000-case annual production from its tasting room. "That way," explains Tom Davies, sales manager, "we don't pay anything to wholesalers or distributors. We get the full retail price."

It also makes the tasting room an essential part of the winery, not merely an option. "Sales is our first priority," Davies continues. "We're set up so that we have to sell the wine here, and bringing people to the winery is the best way to do it. That gives us a chance to talk with them and let them get to know our wines. You don't have that personal connection in most retail outlets. Once people know our wines, they come back for more—we have lots of repeat business."

Tasting Rooms as Public Relations

Selling wine, however, is not generally seen as the most important part of a tasting room's function. Charlotte Kewell, tasting room manager at Rutherford Hill Winery in Rutherford, says, "Public relations and education is a more important function of our tasting room. In fact, we don't even use the term 'tasting room' here; it's known as the Visitors' Center."

Dave Henderson, director of hospitality services at Charles Krug Winery in St. Helena, emphasizes the educational aspect of the tasting room: "We get a lot of wine novices here—this is where they begin their wine education. There's no mystique, no hard sell. We offer a 45-minute tour before the tasting—it's not required, but 80% of our visitors opt for it.

"After the tour, we pour four to five wines, demonstrating as much variety as possible. For instance, we pour a drier white such as Fumé Blanc, a fruity white such as Chenin Blanc, a white Zinfandel, and a Cabernet Sauvignon. Pours are about ½ oz; very little is poured out or wasted." Krug serves 1,200 cases/year in its tasting room.

Michael Peters, retail sales manager at Robert Mondavi Winery in Oakville, concurs: "We don't have a tasting room *per se*; we have a winery tour program." Mondavi is one of the few wineries that requires a tour before tasting. A tasting of three current releases follows the 30-minute tour.

"We have 250,000 people/year for one hour," states Peters. "They learn about our winery, taste our wines, then go home and tell their friends about us. That kind of word-of-mouth approach is the best public relations. The tour stresses the vineyard and production aspects of winemaking, and the subsequent tasting is used to explain tasting techniques. It's an educational program, the more people know about wine, the more they'll drink it."

Founders Room at Beringer Vineyards.

Beringer Vineyards in St. Helena began requiring a tour before tasting thirty years ago. Jim Barfield, tasting room manager, explains, "During the tours, we have an audience of as many as 1,200 people on summer weekends. We can show them the romance of the winery—the 110-year-old Rhine House, the gardens, the trees, the caves. The tour gives people a lasting impression." It also sells wine—better than half of Beringer's visitors purchase wine after the tour and tasting, averaging two bottles/person.

Rutherford Hill offers two tours daily. "There are four unique aspects about our winery that draw people here," Kewell explains. "One is the system of underground ageing caves, the largest in America; that's a real highlight of the tour. Another aspect is the winery's architecture; people hear about our building from other wineries and come to see it.

"Rutherford Hill's location above the east side of the Napa Valley provides a spectacular view of the valley for interested visitors. Finally, the Auberge du Soleil restaurant is right next to us. Often, people going to Auberge for lunch or dinner will visit the winery before or afterwards." Rutherford Hill also works with Auberge du Soleil to put on public relations dinners in the caves, again emphasizing the winery's unique aspects.

Purchasing What They Taste

Davies attributes some of V. Sattui's success to the fact that people can taste all their wines. "All 12 of our wines are open daily for tasting. People won't buy what they can't taste." Mondavi's Peters agrees: "People generally buy the wines which we pour after the tour."

At Charles Krug, as well, people buy what they can taste. However, Henderson notes, "Most of what we pour is in the mid-priced category—$5—$7—so that's what people buy. But if we pour one of our $12 or $15 vintage selection wines, they're just as likely to buy that—because they can taste it. Occasionally we'll pour our Muscat Canelli. It's $10/bottle, but it always sells when we pour it." Of Krug's 180,000 annual visitors, Henderson estimates that 70–75% purchase wine, usually about two bottles/person.

Franciscan Vineyards in Rutherford offers special tastings in its tasting room. Lisa Ross, hospitality director, explains, "We're open daily all year long, and at 2:00 p.m. every day we offer a mini wine seminar, free of charge. It's really a sensory evaluation, but we try to stay away from that term, because so many people outside the industry don't understand it. The whole idea is to exchange knowledge without intimidating those just learning about wine."

Non-Wine Sales

Wine and hospitality are not the only things sold in tasting rooms. Gift shops, including such items as T-shirts, souvenir logo glasses, corkpullers, posters, tote bags, aprons, and wine books, are a common part of most tasting rooms. Peters estimates that the Mondavi gift room is responsible for about 20% of total retail room profits.

At V. Sattui, that figure is 25%. "Although," Davies admits, "that amount was different about eight years; more gift items were being sold then. As awareness and brand recognition of V. Sattui have increased, we have sold more wine. We have a fully-stocked deli as part of the retail room. People come here for the whole experience. They can get their food, wine, and picnic all in one spot."

At Franciscan, gift-item purchases are generally in addition to what most visitors already planned to spend on wine. "Most people seem to visit the wine country with a wine budget," Ross believes. "If they see a T-shirt or a souvenir glass that they like, it usually ends up being an impulse purchase above and beyond what they had planned to spend on wine."

Franciscan's president, Agustin Huneeus, worried that if people were buying gifts, they weren't buying wine, so during the summer of 1986, many Franciscan gift items were eliminated, limiting the variety of T-shirts, for instance, and cutting out boxed glassware altogether. "Our non-wine gross went way down," Ross recalls, "but the wine gross stayed about the same. Now I've got most of those gift items back in the shop."

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Sterling's tasting room provides tables and chairs for visitors while tasting.

Kewell offers a contrasting point of view on the effectiveness of gift items in the retail room. "At Rutherford Hill," she says, "we have a very limited line of gift items—Rutherford Hill shirts, glasses, and corkpullers—as we prefer to focus on wine, not merchandise. After an informative tour and free tasting, many people feel obligated to make a purchase. We prefer that they take home a bottle of wine to enjoy later. Otherwise, they may pick up some inexpensive memento which is not even related to our wine."

Picnic Grounds

Picnicking is nearly as popular at wineries as winetasting. Several wineries have picnic grounds, usually with about 10–15 tables. These are generally open to the public, but Behr states, "At Cuvaison, we charge $3.00/table, and, since summer 1986, we've taken advance reservations for large groups. The tables can also be reserved after 6:00 p.m. for groups interested in summer evening dinners."

Rutherford Hill will also reserve picnic tables for visitors. The winery has two picnic areas: one under a grove of oak trees next to the parking area for accessibility, and the other in an olive grove designed for more private picnicking with a view of the vineyards below. There is no charge to winery visitors for picnic table use.

The V. Sattui picnic ground has become so popular that the winery has put up a sign stating that a $5 minimum purchase is required to use the picnic tables. "It's not really enforced," Davies admits, "but it does help keep down the number of people who treat us like a public park. Our parking area is limited due to county restrictions, and since this is the only place where people can buy our wine, we try to keep the parking spaces available for them."

Crowd Control

V. Sattui's location on the Napa Valley's popular Highway 29 is one reason for the frequently-crowded conditions. Robert Mondavi, also on Highway 29, began taking reservations for tours in the summer of 1986 to help keep crowds down. "We like to keep our tour groups to about 25–30 people," Peters explains. "The tours were getting too big, so we finally had people call ahead or sign up for a specific time when they arrived at the winery. Sometimes there'd be a 1- to 2-hour wait, so we'd advise them to visit another winery before the tour."

Charging for tasting is another form of crowd control practiced in the Napa Valley. At Cuvaison, for instance, purchase of a souvenir logo glass for $1.25 is required before tasting the five

John Daniel Room at Inglenook-Napa Valley.

wines open daily. Behr explains, "This really helps cut down the number of people who are just looking for free wine. We don't really make a profit from it, since the glasses cost about $.95 cents each and retail for $1.18 plus $.07 sales tax. But it does separate the more serious tasters from the ones who aren't really interested in our wines."

Like Cuvaison, Franciscan requires the purchase of a $1.25 souvenir logo glass for a tasting of five wines. "But," Ross points out, "we rebate that cost on any wine purchase, so most of our visitors end up purchasing wine. That way, they end up with a complimentary tasting *and* a souvenir glass, in addition to their wine purchase.

"The average expenditure on wine at Franciscan is about $6.50/person. Weekend visitors tend to buy the less expensive wines, while weekday visitors will buy more expensive wines, although we generally offer the same wines for tasting. Weekday visitors are usually more serious wine buyers. They often may not even taste all five wines offered, whereas weekend visitors nearly always taste all five. We receive about 150,000 visitors annually."

Sterling Vineyards in Calistoga has perhaps the most unique answer to crowd control. A 3- to 4-minute tram ride takes visitors to the top of the hill on which the winery is located. Charge for the ride is $5.00/person, or $4.00/person for large groups. Valerie Presten, visitors' center manager, points out, "Visitors receive a $2.00 discount on the first bottle of wine they purchase.

"We receive 200,000 visitors/year. Once at the top, visitors can take a self-guided tour, followed by a sit-down tasting of three current releases. Visitors may request to taste certain special wines in which they are interested. All tastes are complimentary." Pours are 1½ ounces. In addition to offering current and older vintages for sale, the gift shop offers wine-related books, bottle openers, glasses, serving pieces and logo clothing items.

Older and Reserve Vintages Offered

Another trend toward making tasting rooms cost-effective involves offering tastes of older vintages and reserve wines for a small charge. "We started doing this at Robert Mondavi Winery when we went on the reservation system," states Peters. "It gives people something to do while they're waiting for the tour to start, and they also get a chance to taste some special wines. More experienced wine drinkers can get an idea of how well these wines will age.

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"Our 3-oz pours of older and reserve wines cost between $2 and $4. Recently, for instance, we were pouring 1981 Chardonnay, 1982 Reserve Fumé Blanc, 1982 Reserve Pinot Noir, 1979 and 1981 Reserve Cabernet Sauvignons, and the 1985 Special Select Johannisberg Riesling."

Beringer offers older vintages in its Founder's Room, located upstairs in the Rhine House. "We pour more expensive wines here," explains Barfield, "as opposed to the new releases poured at no cost downstairs after the tour. Our charge for a 2-oz taste (as opposed to a 1-oz taste downstairs) is $2.00, except for the 1981 Private Reserve Cabernet Sauvignon, which sells for $3.00/taste, and the 1981 Lemmon-Chabot Cabernet Sauvignon, for $3.50. In essence, the cost enables people to taste wines they wouldn't otherwise be able to."

Other reserve wines recently poured in the Founder's Room include 1983 Private Reserve Fumé Blanc, 1983 Private Reserve Chardonnay, 1983 Barrel-Fermented Chardonnay, 1983 Chardonnay, and 1981 Knight's Valley Cabernet Sauvignon.

Inglenook-Napa Valley opened its John Daniel Jr. Cellar in 1986 to give visitors an opportunity to sample library and reserve wines. Wines offered for tasting include Reserve Cask Cabernet Sauvignon from 1978 on, in addition to reserve bottlings of Merlot, Chardonnay, and Sauvignon Blanc. Charbono and other library wines are poured on occasion. Charges for 2-oz tastes are $3.00 for library wines and $2.00 for current reserve wines.

Dennis Fife, vice president/general manager for Inglenook-Napa Valley, says, "From mid-summer 1986, when we opened the John Daniel room, until November, we sold about 1,000 bottles of library and reserve wines. The average purchase was about 3 bottles/person, or about $50." Wines for sale included the 1978 reserve Cask Cabernet Sauvignon at $25/bottle, the 1981 reserve Cask Cabernet Sauvignon at $15/bottle, the 1983 reserve Merlot at $11.50/bottle, the 1984 reserve Chardonnay at $13.50/bottle, the 1984 reserve Sauvignon Blanc at $9.50/bottle, and the 1982 Charbono at $8/bottle.

The John Daniel room is open when there is a demand for it. "During the busier times," notes Fife, "such as summer weekends, we can direct more serious tasters to the John Daniel room, while more casual visitors go to the regular tasting room."

At Rutherford Hill, Kewell says, "The availability of older vintage wines, such as the 1978 Cabernet Sauvignon and a variety of Merlots, are a special attraction. People are eager to try them, and may taste them free of charge when their interest is genuine."

In addition to older vintages, Rutherford Hill also offers various bottle sizes for sale, often at special discounts. "We have offered 20% off on magnums, for instance," Kewell explains. "Because wine ages better in larger containers, people feel that they're getting good value for their money."

The Bottom Line

The bottom line, of course, is whether or not all these sales techniques ultimately justify the expense of operating the sales room. "Absolutely," states Peters. "At Robert Mondavi Winery, we pour 3,000 cases of wine per year and sell 15,000 cases, which more than covers operating costs."

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THE CHALLENGE OF Zinfandel

Rhoda Stewart

Part I

In 1888, George Husmann, in *Grape Culture and Wine Making in California*, wrote, "I have yet to see the red wine of any variety which I would prefer to the best samples of Zinfandel produced in this state. Unfortunately, these *best* samples are like angels' visits, few and far between.

"There are many locations within this state where [Zinfandel] has been planted, and will not make a first class red wine, where it could be utilized better for white wine . . . Zinfandel claret from locations best adapted to it, carefully made, is good enough for anyone," concluded Husmann.

Although in the late 1880s, the best samples of Zinfandel claret[1] may have been as rare as angels' visits, over the past 15–20 years several vintages of 'best samples' have been produced by many winemakers. Dedicated to producing Zinfandels that are indisputably 'good enough for anyone', these winemakers use grapes only from proven locations.

They have been working continuously to increase their knowledge and understanding of the regional characteristics of each of the vineyards they work with. Growers are taking advantage of developments in viticultural technology, and generally have been improving farming methods—all of which has led to improved crop and wine quality.

Best Zinfandel Vineyard Locations

Since Zinfandel's resurgence as a varietal wine, which began in earnest in the late 1960s, four regions have been determined to be especially suited to Zinfandel: 1) Amador County's Shenandoah Valley and Fiddletown area; 2) Sonoma County's Dry Creek Valley benchlands and hillsides, the Geyserville area, and a few select areas in the Mayacamas Mountains and in Sonoma Valley; 3) Mendocino County's southwestern ridges and its benchlands along Redwood Valley; and 4) Napa Valley's Spring Mountain and Howell Mountain, and a few select valley floor regions.

A few superior Zinfandel vineyards exist outside these main regions; there are, for example, some good plantings in Paso Robles, Lodi, and El Dorado County.

Zinfandel from each region has distinctive varietal characteristics of fruitiness and peppery spiciness. The characteristic varietal flavors, however, are mostly perceptible only in the wine, and they vary from region to region.

In general terms, some regions produce Zinfandel more noted for its lush berry-fruit character than for its spiciness (for example, Amador, Sonoma's Dry Creek Valley benchlands and hillsides, and the Mayacamas Mountains). Other regions (Napa's Howell Mountain and Spring Mountain, and the benchlands of Mendocino's Redwood Valley) produce Zinfandel more noted for its spiciness than for lush fruit.

The extent to which tannins are considered 'hard' (astringent, tending to bitterness) or 'soft' (puckery, but not astringent or harsh)—differences sometimes referred to as 'perceived' tannins vs. 'unperceived' tannins—varies from region to region, as does the amount of tannin which is present in each form.

For example, Amador Zinfandel has high tannin content, but it is a soft tannin; Sonoma Zinfandel has soft tannins, but the tannic content is lower than Amador's. Napa and Mendocino Zinfandel have hard tannins, with the tannic content of Napa Zinfandel lower than Mendocino's.

Zinfandels with hard tannins need more time in the bottle to reach their potential than do Zinfandels with soft tannins. The degree of tannin extraction also affects wine character and ageing potential.

While acid levels in all these best regions is good—0.75 g/100mL and higher—total acids can vary significantly, and the ratio of malic to tartaric can vary dramatically.

Original vines in these regions date to the 1920s and earlier, and were planted primarily by Italian immigrants, who, according to old ranchers, seemed to know intuitively where Zinfandel would do best. The oldest known Zinfandel vineyard is the 10-acre Downing Vineyard in Amador's Shenandoah Valley. Today owned by Scott Harvey, winemaker for Santino Winery, the deed shows that the vines were planted in 1867. The vineyard, situated at about the 1,400-foot elevation on a western slope, still flourishes.

Older vineyards today make up only a small percentage of total Zinfandel plantings in each region, and the grapes are used primarily for limited bottlings of intensely-flavored full-bodied[2] Zinfandels with expected ageing potential of 10 years and longer. These old vineyards are dry-farmed, head-pruned, and yield from 1.5–2.5 tons/acre.

New Zinfandel Plantings

Since 1970, extensive new plantings of Zinfandel were made in these four main regions, making Zinfandel again the most

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abundantly-planted red varietal in California, with 25,454 acres in 1984 (*California Grapevine*, p.3, July 1985). Most of the wood for these plantings was taken from old vines. With rare exceptions, the new vines are head-pruned; they may be aided by drip irrigation; and they generally yield from 3–5 tons/acre.

From the newer plantings, bottlings of medium-bodied Zinfandels are being made—wines at their best, according to winemakers, after two—five years in the bottle. Young Zinfandel vines tend to produce fruit without intense flavors and spice, nor the acid levels, that older vines produce. High acids are needed to carry bigger (that is, fuller-bodied) wines.

However, it is not uncommon for winemakers to blend in fruit from old vines with crops from younger vines, as there is a much larger demand for medium-bodied Zinfandel than for full-bodied. Some winemakers also feel that a little of the character of the old vines belongs in their medium-bodied Zinfandels.

Depending on the character of the vineyards, the percent of fruit from old vines, and the balance overall of tannin, fruit, and acids, some medium-bodied wines are showing potential to improve in the bottle for as long as the full-bodied vintages.

Zinfandel's ultimate ageing potential, however, is still to be discovered, winemakers point out, as Zinfandel is just now beginning to establish a 10-year track record among a dedicated and consistent group of Zinfandel producers.

Uneven Ripening of Zinfandel

Winemakers interviewed indicated two main challenges to making a Zinfandel 'good enough for anybody'. The first challenge is Zinfandel's propensity to ripen unevenly—the single most problematic characteristic of this varietal. This propensity is especially pronounced among vines 30 years old and older in all regions.

As harvest date nears, each cluster can contain green berries, normally-ripening berries, shrivelled berries, and raisins. The ripening curve also can vary significantly among pockets within each vineyard. This makes selection of harvest date difficult.

For the full-flavored, full-bodied Zinfandels that old, mature, dry-farmed vines are capable of producing, up to 10% over-ripe berries are needed to provide rich, intense flavors and extractions necessary for ageing. But raisins and excessive shrivelling are undesirable, as they yield alcoholic, pruny wines that do not age well.

To balance flavor with overall sugar level is not often an easy task, as sugar levels are always higher in the tank samples than in field samples. How much higher depends on the percentage of raisined berries—a percentage usually difficult to determine, and which varies from season to season.

Among vineyards under 30 years old, uneven ripening is less pronounced. Young Zinfandel vines yield bigger crops, which helps to maintain even ripening. Also, young vines have been planted in better-prepared soil than were their forebears. Thus there is less likelihood of variation within vineyards caused by variations in soil conditions.

In addition, growers who choose to plant Zinfandel in these regions are usually knowledgeable about both the region and the varietal, and practice the best farming and viticultural methods they can in order to produce superior-quality fruit.

Selection of harvest dates for claret-style Zinfandels, therefore, requires being thoroughly familiar with each vineyard. In addition to the acid, sugar, and pH, physical signs of vine maturity, percentage of shrivelled and raisined berries, size of second crop, and taste also must be considered for each vineyard each year.

Style Variations

The second challenge facing the Zinfandel producer today, whether he works with young or old vines, is the still-existing confusion over the definition of 'perfect' Zinfandel. This confusion developed in the early to mid-1970s, when a profusion of Zinfandel came on the market. Many of these Zinfandels were heavy, unbalanced wines, in that they were overly alcoholic, overly tannic, or both. Such wines were, at least in part, the result of winemakers' inexperience with Zinfandel's characteristic uneven ripening.

To about 1975, most Zinfandel picked was from mature dry-farmed vineyards in these regions—simply because that was the only Zinfandel available. (New plantings were not producing much before then.) Old Zinfandel vineyards survived Prohibition because of the home-winemaking market, which was always legal. Italian, Serbian, Yugoslavian, Swiss, and Basque

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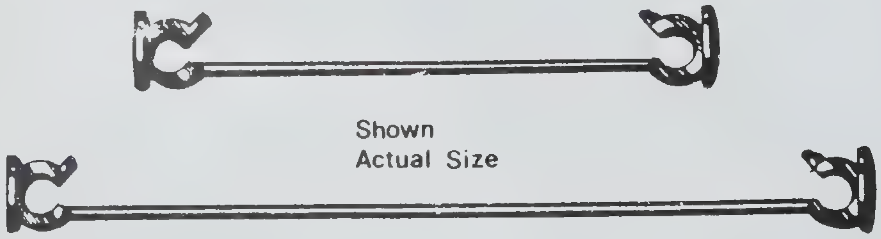

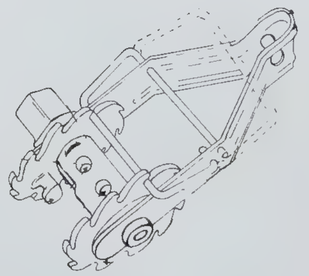

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immigrants in northern California, were home winemakers choosy enough about their grapes to have supported only the best vineyards.

Excessive shrivelling, even raisining, however, wasn't considered a problem by the home winemaker for his rich, country-style wines. The commercial winemaker of the 1960s and early 1970s, therefore, usually got his Zinfandel in accordance with the growers' customary harvest date—a date when the grapes were well past what modern winemaking practices would call mature.

Yet, as Paul Draper pointed out in 'Zinfandel' (*Book of California Wine*; Maynard Amerine, Doris Muscatine, Bob Thompson, eds.; U.C. Press; 1984; pp. 223-234), there has been no standard set over hundreds of years for Zinfandel claret as there has been in Bordeaux for Cabernet Sauvignon claret.

Thus, the rich, ripe pruny flavors in the tannic, alcoholic early Zinfandels produced from largely overripe and raisined clusters were seductive, overwhelming even, to many who first tasted them upon release. They convinced some winemakers (and members of the wine press!) that Zinfandel was synonomous with tannic and intense. Wines in this style, however, while impressive at tastings, can seldom be matched with food; and rarely do they hold up for long in the bottle.

Absence of a historic approach to Zinfandel led to experimentation not usually encountered with other premium wine grapes. Paul Draper identifies five styles of Zinfandel (in addition to white Zinfandel, Zinfandel rosé, and Zinfandel port): nouveau; early maturing (Beaujolais-style); late maturing (claret-style); late-picked (dry); and late harvest (sweet) (*Ibid.*). Such variety served mostly to confuse consumer and winemaker alike as to Zinfandel's true potential.

Winemaking Approaches

Among winemakers interviewed, the confusion is at last lessening. Today, they are unanimous in their conviction that Zinfandel's strength and beauty lies in its ability to produce well-balanced claret-style wines, both medium- and full-bodied, that for the most part stay under 14% alcohol.

But with these convictions, the unanimity ceases. For each winemaker has his own approach in working with a regional Zinfandel to achieve his idea of the 'perfect' Zinfandel claret—whether full- or medium-bodied.

Also, while some of the 14 winemakers interviewed declared that they 'never have and never will' make a white or blush Zinfandel, several currently are producing well-made 'blancs de noirs' from Zinfandel. The methods for four 'blancs de noirs' are included in interviews to follow.

Winemakers interviewed include Paul Draper of Ridge Vineyards, Cupertino; Mike Martini of Louis Martini Winery, St. Helena; Joel Peterson of Ravenswood, Sonoma; Jed Steele of Kendall-Jackson, Kelseyville; Paul Dolan of Fetzer Vineyards, Redwood Valley; and Bob Travers of Mayacamas Winery, Napa.

Using only Sonoma county grapes were: Joseph Swan of Joseph Swan Vineyards, Forestville; John Pedroncelli of J. Pedroncelli Winery, Geyserville; and Lou Preston, owner, Tom Farella, winemaker, and John Clendenen, viticulturist, Preston Vineyards, Dry Creek Valley, Healdsburg.

Using only Amador county grapes were four winemakers in Plymouth: John Kenworthy of Kenworthy Vineyards; Leon Sobon of Shenandoah Vineyard; Scott Harvey of Santino Wines; and Lawrence (Buck) Cobb of Karly Wines.

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[1] 'Claret' is defined in the Oxford English Dictionary as "a name origi-

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nally [about 1200] given (as in French (*vin clairet*) to wines of yellowish or light red color, as distinguished alike from 'red wine' and 'white wine'; the contrast with the former ceased about 1600, and it was apparently then used for red wines generally, in which sense it is still, or was recently. Now applied to the red wines imported from Bordeaux, generally mixed with Benicarlo or some full-bodied French wine."

Paul Draper and this report both use 'claret' to describe any variety when it is made as though it were a fine Cabernet Sauvignon.

[2] 'Body' is used by winemakers to refer to alcohol and glycerol content. Wines with alcohol content of 13–14% are considered 'full-bodied'. To produce a full-bodied Zinfandel, grapes are picked at 22.5 - 23.5° Brix (sometimes higher). Must for full-bodied wines is almost always fermented for greater levels of tannins (both hard and soft) and greater levels of other phenols (flavor components).

In addition, high alcohol levels (produced by high sugar levels) tend to extract more tannin and other phenols. Thus, full-bodied wines are by nature more tannic and more intensely flavored than medium-bodied (less alcoholic) wines, which are produced from grapes picked between 21.5° and 22° Brix–and whose alcohol is between 12% and 12.8%. (Under 12% alcohol is considered light-bodied.)

Louis M. Martini Winery

Michael Martini, winemaker since 1977, at Louis M. Martini Winery in St. Helena, believes, "Zinfandel grown in valley-floor regions needs to be at least 10 years old to make varietal Zinfandel claret. Hillside vineyards need to be older–15 years minimum. Higher acids carry bigger wines. Acids balance more tannin, more color, more fruit. It's the older vines that produce the higher acids, the ones whose root systems have had time to establish themselves."

Source of Grapes

Most grapes in Martini Zinfandel come from the winery's Monte Rosso vineyards in Sonoma County. At an elevation between 900 and 1,200 feet, 20 acres date to the 1890s, with 2 or 3 acres of 'grandma' vines dating back to about 1870–or earlier. Forty additional acres were planted in the late 1960s from budwood off the original vines. The vines are head-pruned and dry-farmed, and yield under 3 tons/acre.

Above the fog line, yet cooled by San Francisco Bay breezes, Zinfandel from the Monte Rosso Vineyard tends to have higher acids, lower pH, and more tannins than valley-floor Zinfandel. Average total acids in Monte Rosso grapes, from crusher samples, are 1.1 g/100mL, with about 0.30 g/100mL malic. After malolactic fermentation, total acids are between 0.75 and 0.80 g/100mL. Average harvest pH is 3.0, with final pH around 3.3.

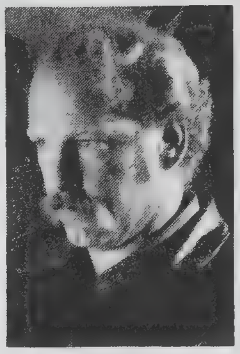
"The 1986 harvest figures were even better," said Martini. "The yield was very low–just a little over ½ our normal yield. The crusher samples showed 24° Brix sugar, 1.25 g/100mL TA (0.33–0.40 g/100mL was malic), and 3.06 pH. The must even smelled exceptionally intense and fruity."

From the Haynes Vineyard, Napa Valley, the other main source for Martini Zinfandel, the 1986 figures were 23.8° Brix, 1.04 g/100mL TA, and 3.15 pH–also exceptional. The overall 1986 harvest figures were 23.8° Brix, 1.21 TA, and 3.08 pH. "The total acid in the finished wine will be right where we want it: 0.75–0.80 g/100mL. The acids, along with the exceptional intensity of flavor from our low yield, indicates that the 1986 vintage is going to be one of our best."

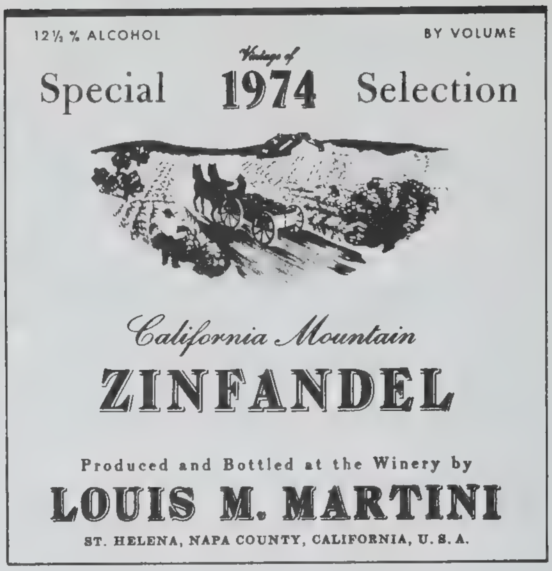
"Head-pruning," Martini believes, "permits maximum light exposure for the leaves without subjecting grapes to excessive amounts of direct sunlight, leading to higher-quality Zinfandel. The grapes need light for development of color and tannin. Too much direct heat causes degradation of flavors. Heat causes astringency and bitterness."

Winemaking

Louis M. Martini Winery, which produced its first varietal Zinfandel in 1933, has rarely sought the heavy (astringent) tannins. Thus, control of tannins, both viticulturally and during the winemaking process, is important. "Tannins should never outweigh and outlast the fruit," Martini emphasizes. "But it's the polymerized tannins, the big, heavy tannins, developed in the grape by high ripeness and excessive heat, that produce the chewy, puckery, astringent quality."



Michael Martini



12½ % ALCOHOL BY VOLUME

Vintage of

Special 1974 Selection

California Mountain

ZINFANDEL

Produced and Bottled at the Winery by

LOUIS M. MARTINI

ST. HELENA, NAPA COUNTY, CALIFORNIA, U. S. A.

Unpolymerized tannins are perceived as bitterness or refined texture, and help a wine to improve in the bottle over several years. High acids and low pHs can carry more unpolymerized tannins. In cool regions, such as that of the Monte Rosso Vineyards, the tannins are slow to polymerize. The grapes are picked at a higher Brix than would be possible in warmer regions, where the heat, combined with lower acids and pH, bring about earlier polymerization.

"We are able to get the flavor and body that come with full ripeness, while retaining balance. This means that the wines are soft and fruity at release, but will improve in the bottle for many years, without danger of the tannins outweighing or outliving the fruit," Martini stated.

"Furthermore, 70–80% of all tannins in wines is predetermined by the grape–and it varies season to season. The challenge is to determine how much to extract, in relationship to the acids, phenols, and other components, to make a well-balanced, long-ageing wine."

Grapes for Martini Zinfandel are picked when a field sample shows 22.5–23° Brix, which produces wines with alcohol between 13% and 13.5%. The fruit from each ranch, and from each block according to age, is kept separate.

Second crop is left on the vines. "It isn't large enough to present a problem," noted Martini. However, about 10 years ago, a new Martini Zinfandel vineyard was planted in Chiles Valley from Monte Rosso budwood. Conditions proved to be so favorable to Zinfandel that its early crops went to 8 tons/acre even with severe pruning and removal of second crop. "The problem was to keep the vines from throwing third and fourth crops as well," added Martini. "The vineyard is still a big producer, and is used in our white Zinfandel. White Zinfandel saved that vineyard for us."

The must is fermented in 12-ton open-top fermenters. It is inoculated with Champagne 595 yeast, and is fermented at 65–75°F until it reaches 12° Brix, about 4 days. All cooling is then turned off, to allow the temperature to rise to about 80°F for the duration of fermentation. Pump-over is twice daily for 20 minutes.

"The most rapid fermentation takes place down to 12° Brix," said Martini. "Production of CO_2 can be voluminous, and can carry off fruit aromas if the speed of fermentation isn't controlled. From 12° Brix down, build-up of alcohol controls fermentation through feedback inhibition. That is, the alcohol begins to kill off the yeast, slowing fermentation and production of CO_2. During this time, the increased heat, combined with the alcohol, increases extractions from the skins. By keeping the temperature low during early fermentation, you preserve the fruit aromas; by increasing it during the latter phase, you get additional fruit and other extractions from the skins."

When fermentation is complete, the must is pressed, and the free-run wine is held in redwood tanks to settle, and to go through a spontaneous malolactic fermentation. First racking takes place after malolactic is complete, the second before December. SO_2 is added after malolactic, and after each racking as needed.

Ageing Regime

Zinfandel spends two to three years in old redwood tanks. Martini Zinfandel never touches oak, because Martini feels the fruit and pepperiness of Zinfandel is best unsullied by any hints of wood.

After ageing, the wine lots are blended. The best 2–3 tanks, those with the more intense flavors and richer tannins and esters necessary for improving in the bottle for many years, may be used for a Special Selection Zinfandel; the rest make up Martini's regular Zinfandel.

At this time, Martini occasionally blends in Gamay to moderate the natural spiciness. "The 1986 vintage," said Martini, "with its especially intense character, may need this addition.

"Before bottling, the wine is cold-stabilized at 26°F for two weeks. During this time, it is usually fined, if necessary, with egg whites. After cold stabilization, the wine is given a medium DE filtration in line to the bottling tank."

Louis M. Martini regular Zinfandel is held six months in the bottle before release; the Special Selection, 5–6 years. Martini Winery makes about 20,000 cases of regular Zinfandel, and, when it is made, between 1,000 and 2,000 cases of Special Selection.

"Because the average age of the vines used for Zinfandel is now 40 years, I feel that our regular Zinfandel is approaching 'reserve' quality," says Martini. "This quality will continue to improve as the younger vines, now 20 years old, continue to mature. Our great vintages were the 1954, the 1968, the 1970, and the 1980."

In response to all the 'hoop-la' about the 'big-style' tannic Zinfandels of the 1970s, Martini Winery did make two Special vintages in that style: 1977 and 1978, both Monte Rosso Vineyard-designated. To achieve this style, Martini allowed the grapes to ripen to about 27° Brix, so that the acids dropped and allowed the tannins to polymerize—to grow into the astringent, chewy state.

How did these wines do? "Great," said Martini. "The critics liked them. They sold. But we didn't like them, so we never made them in that style after 1978."

Tasting Notes:

Louis M. Martini 1974

Color/Aroma: Ruby, slight tawny; briary, vanilla, butterscotch, clean, slight raisiny quality.

Flavors: Soft, starting to fade, cinnamon, vanilla, cherry.

Balance/Finish: Supple, mellow, slightly hot and harsh.

Louis M. Martini 1983

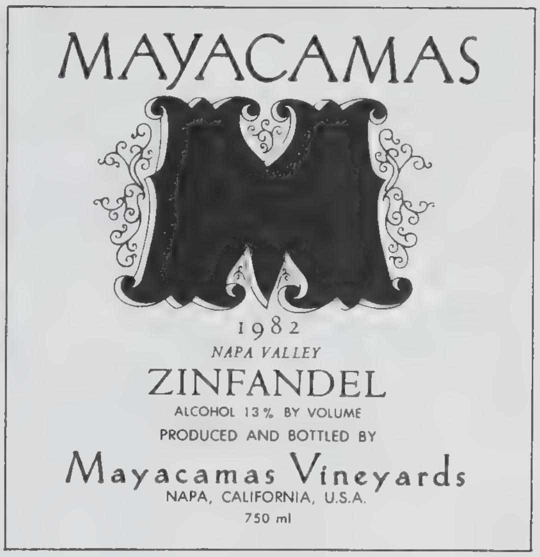
Color/Aroma: Medium ruby; light, toasty, subdued fruit, cherry.

Flavors: Tart, cherry, raspberry, oak, a bit thin in middle, caramel.

Balance/Finish: Good balance, lighter style.

Mayacamas Vineyards

Bob Travers



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NAPA, CALIFORNIA, U.S.A.
750 ml

Bob Travers, owner/winemaker of Mayacamas Vineyards, made his first Zinfandel from Napa Valley grapes in 1968, when he bought the winery. He made Zinfandel again from 1972–1974 from Montevina Vineyard grapes, in Amador County's Shenandoah Valley. From 1976–1978, he used Shenandoah Valley Zinfandel, from Baldinelli Vineyard. In 1982 and 1983, he used Zinfandel from 10-year-old Pickle Canyon Vineyards at the 1,400-foot level of Napa's Mt. Veeder. In 1984, he bought grapes from the 10-year-old Sky Vineyard, at Mt. Veeder's 2,000-foot level.

Although Travers agrees that old vineyards are necessary for full-bodied, longer-ageing Zinfandels, "It doesn't mean you can't make a good wine from young vines. What you have to do is keep crops smaller on young vines; you have to balance crop with the vine's vigor, its soil, climate, and moisture."

Wine Style

Mayacamas Zinfandel became well-known for its high-ripeness, dry style from Shenandoah Valley fruit. Travers also made a late-harvest Zinfandel in 1978 from Templeton Vineyard, San Luis Obispo County. Also an old vineyard, "This vintage was," according to Travers, "very intense, powerfully rich. It had a briary, raspberry aroma that was fruity, yet spicy and peppery. The grapes came in at 30° Brix; the wine was over 17% alcohol. And, yes, it definitely had a raisiny character, so it was port-like—a dessert wine, not a dinner wine. It is very nice with nuts and creamy cheeses."

With the legal aid of the Wine Institute, he won the right to call his 17%-alcohol, late-harvest dry Zinfandel a Zinfandel, not a port or sherry. "Some of these late-harvest dry Zinfandels have aged 8 - 10 years without breaking down," says Travers. "Some people feel these wines won't be at their best until they've had 15–20 years in the bottle. Some feel they are best shortly after release. Also," added Travers with a chuckle, "there are those who feel they shouldn't be drunk at all—at any age!" Regular-harvest Zinfandels have been made, with alcohol under 14%, primarily from young Mt. Veeder vineyards. He did make a regular-harvest Zinfandel as early as 1977 from the old Templeton Vineyard. However, it is more the season that determines which style he makes—not the source. "Zinfandel gets second—or third—priority at Mayacamas," said Travers—after Cabernet Sauvignon and Pinot Noir. "If Zinfandel ripens at the same time as the others, then Zinfandel waits—and becomes late harvest."

Winemaking

For the regular grapes, Travers shoots for full ripeness and mouth-filling intensity, therefore picking when he gets a field sample of 23° Brix or higher. The acid should be at least 0.75 g/100mL; 0.85 is preferred. Open-top concrete fermenters are used and the wine is left on the skins to dryness, which usually takes 7–8 days.

After fermentation, Zinfandel is aged for two years in 1,000-gallon oak tanks. Travers avoids small oak cooperage because, while it adds complexity both from oxidation and wood extractions, it takes away some of the fruit. "The fruit," says Travers, "is what Zinfandel is all about." The Zinfandel is usually racked 4 times during its first year, and once during its second. The wine receives a coarse filtration at bottling, but no fining.

Malolactic fermentation occurs naturally. The late-harvest Zinfandels do not go through malolactic, because the high alcohol inhibits the bacteria from growing. Both regular harvest and late harvest vintages have a final TA of around 0.65 g/100mL.

For the late-harvest Zinfandel, the wine is on the skins for 8–10 days. To encourage fermentation, the temperature is kept at 70°F and the wine is allowed to ferment to dryness—which sometimes takes 60 days or longer. When the wine reaches dryness, it is cellared the same as the regular-harvest Zinfandel.

Mayacamas has produced from 350 cases/year of Zinfandel up to a maximum of 1,200 cases.

Tasting Notes:

Mayacamas 1978

Color/Aroma: Brick-red; vegetal, herbaceous, tarry.
Flavors: Tannic, medicinal, port-like, olives, candied cherry.
Balance/Finish: Short but rich finish, late-harvest style.

Mayacamas 1982

Color/Aroma: Dark red; blackberries, dill, earthy.
Flavors: Tannic, oaky, slight raisiny.
Balance/Finish: Long finish, slightly bitter, needs age.

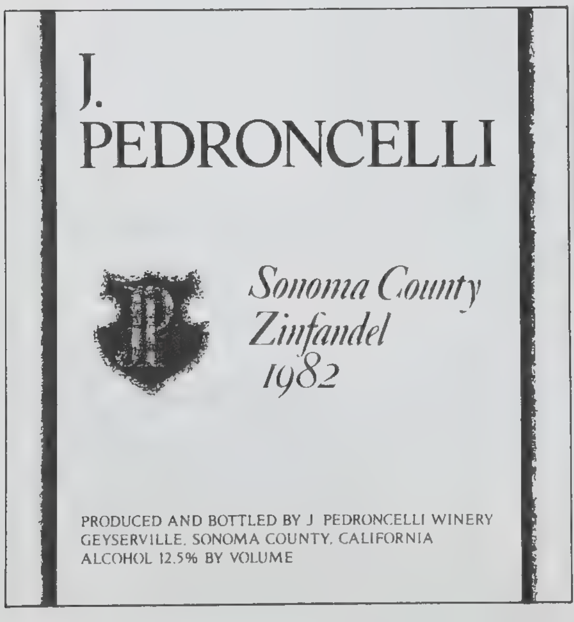
J. Pedroncelli Winery

J. Pedroncelli Winery, Geyserville, has used Zinfandel in its red wines since John Sr. acquired the winery, along with 30 acres of Zinfandel, in 1927. The vineyards were planted about 1920 on the porous and well-drained benchlands and hillsides behind the winery. The soil is decomposed red rock. The vines were non-irrigated and head-pruned. In the 1950s, Pedroncelli made its first varietal Zinfandel from fruit off these vines.

In the past 10 years, Pedroncelli has been replanting these 'home' vineyards with wood off the original vines as well as with wood from the Lawrence Smith Vineyard, Alexander Valley. The new plantings are spaced 7x10 and use overhead sprinklers to get the vines started. During dry years, the vines may be given one watering during the spring.

Grapegrowing

Pedroncelli removes all crop from the new vines during their second leaf, to help the vines get established. The vines produce their first crop in their third leaf. The third- and fourth-leaf crops go into Pedroncelli's white Zinfandel. In the vines' fifth leaf, Pedroncelli begins using the fruit for Zinfandel.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1982
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GEYSERVILLE, SONOMA COUNTY, CALIFORNIA
ALCOHOL 12.5% BY VOLUME

John Pedroncelli

Pedroncelli does not remove the second-crop Zinfandel prior to harvest. "Old vines naturally set a very small second crop," said winemaker John Pedroncelli, Jr. "We control the size of both first and second crops on our new vines by close spacing and head-pruning, which limits growth to two buds/spur. These viticultural practices, together with the benchland and hillside locations, limit first crop size to about 3 tons/acre, and prevent a large second crop from forming. We are careful not to harvest any second crop, but we have not found it necessary to remove it."

Pedroncelli Winery also buys about 350 tons of Zinfandel from select benchland and hillside vineyards in Dry Creek Valley. "Where Zinfandel is grown," said Pedroncelli, "and the soil it's grown in, as well as the age of the vines, are the important considerations for making great Zinfandel clarets. The early Italian immigrants seemed to know instinctively where to plant Zinfandel for the best wines. That is why these old vines produced such great Zinfandels; it's the location as well as the age.

"In any given year," Pedroncelli added, "provided one stays on top of the ripening pattern, one should be able to make a first-class Zinfandel claret from these best locations."

Winemaking

Central to Pedroncelli Winery's winemaking philosophy is the belief that wines are best when made to complement food; they should never rival nor overpower food. For the Sonoma Zinfandel, grapes from both old and young vineyards are picked at 22 to 23° Brix. Total acids are between 0.80 and 0.90 g/100mL; pH is between 3.2 and 3.3.

The must is fermented in 35-ton stainless-steel closed-top tanks. During fermentation, the maximum juice temperature is 85°F, and pump-over, which is a low-pressure sprinkling-style, is several times each day. After 5 to 7 days, the juice is drawn off the skins. The wine ferments to dryness off the skins.

"These fermentation practices," said Pedroncelli, "are followed in order to extract only the softer tannins versus the harsher tannins. High temperatures, violent, high-pressure pump-overs, and long skin contact are the practices that bring out the big tannins—which we don't want." The press wine from Pedroncelli Zinfandel is kept separate, and is usually blended into the winery's 'Sonoma Red' table wine.

When primary fermentation is complete, the wine is put into small redwood or stainless steel tanks for one year, to settle and to go through spontaneous malolactic fermentation. The wine is racked three times during this period.

Pedroncelli Zinfandel spends its second year in small American oak barrels (Kentucky Blue Grass) that are 8–10 years old. Old American oak barrels soften the tannins and add complexity to the wine, yet do not overwhelm the fruit, noted Pedroncelli.

At the end of barrel ageing in the third year, the wine is racked and fined with 2–6 ounces of gelatin/1,000 gallons. When the gelatin settles, which takes about two weeks, there is a rough DE filtration off the gelatin lees. It is polish-pad-filtered just before bottling. At bottling, the alcohol is typically 12.5%, TA 0.65 g/100mL, and pH is 3.3–3.4.

Pedroncelli Winery's Sonoma Zinfandel production until about 1980 totaled 15,000 cases. Between 1980 and 1985, production was decreased, in accordance with the flattened Zinfandel market. In 1986, production once again increased. Pedroncelli expects that it will increase production annually until it once again reaches the 15,000-case level.

For the reserve Zinfandel, grapes from the best old Dry Creek Valley vineyards are picked at a higher Brix—23° or higher—to get a riper, more intense flavor. The same fermentation procedure is followed as for the Sonoma Zinfandel: the must is lightly pumped over several times daily, the juice is taken off the skins before dryness, and the press wine is kept separate.

However, the reserve spends up to 15 months in American oak barrels. While no new oak is used, up to 10% of the barrels are 5 years old. "The longer time in oak, and the percentage of newer oak, adds more layers of complexity," said Pedroncelli. "The reserve Zinfandel is a heavier, fuller-bodied wine (alcohol between 13% and 13.5%) that will improve in the bottle for many, many years."

Pedroncelli reserve Zinfandel is released in its fourth year. About 2,000 cases/vintage are produced.

Tasting Notes:

Pedroncelli Reserve 1981

Color/Aroma: Medium-dark red; ripe cassis, raspberry, cranberry, coffee, olive, nutmeg.

Flavors: Berry, oak, cedar, spicy, peppery.

Balance/Finish: Slightly bitter and harsh, but overall good balance and finish.

Pedroncelli 1983

Color/Aroma: Medium-dark red; vegetal, herbaceous, olives, floral.

Flavors: Sour cherries, dill, berry, spicy, pepper.

Balance/Finish: Medium finish, slightly harsh, ready to drink.

Preston Vineyards & Winery

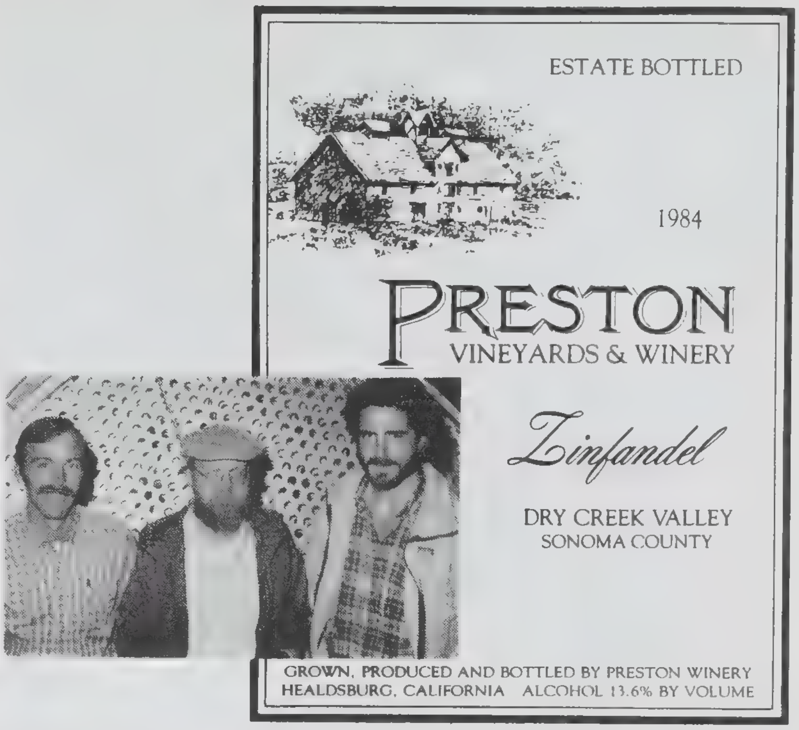
Preston Vineyards & Winery makes Zinfandel only from its Dry Creek Valley vineyard. Twelve acres were planted between 1900 and 1940; another 11 acres were planted since 1975 with budwood from the original planting. An additional 8 acres were propagated from the Meade Atlas Peak Ranch (Napa) clone. Lou Preston, owner, has tried certified UC Davis clones, but found them unsatisfactory. "They had a large bunch and berry size and didn't have the flavor I was looking for," he said. "Great for white Zinfandel but not for me." He has since budded over all recently-planted rootstock to the old Dry Creek Valley budwood.

The first Preston Zinfandel was made in 1975. With the exception of a 1980 late harvest Zinfandel, all vintages have been in a medium-bodied style, with fruit from both old and young vines blended together. Preston describes his Dry Creek Zinfandel as having distinct raspberry fruit flavors, with spice qualities of cloves and cinnamon.

Preston Zinfandels tend to be light in tannins, soft and rich, with jammy ripe-fruit character. They have higher alcohols, often approaching 14%. But the Dry Creek fruit lends a rich, creamy texture that balances the high alcohols, showing none of the coarse, pruny qualities often associated with big Zinfandels.

Another characteristic of fully-ripened fruit is an insufficiency of acid and pH for long-term ageing. Preston recommends 4–6 years cellaring in the bottle for full flavor development. According to Tom Farella, winemaker, typical total acids are around 0.70 g/100mL, with pH at 3.45. An exceptional year was 1985, with TA between 0.85 and 0.95 g/100mL and pH between 3.30 and 3.4. The berries were small, resulting in firmer tannins. Finished TA in 1985 was 0.65–0.70 g/100mL.

Preston has always vinified the wine from their 12 acres of older vines separately, but blended it with the majority of the wine just before bottling. Beginning with the 1985 vintage, Preston expects to bottle a portion of this wine separately as a reserve. Much of the reserve wine will still be incorporated into the regular blend, for, as Preston notes, "our customers expect a hint of the old vines. It belongs in our wine and we won't change that now."


ESTATE BOTTLED
1984
PRESTON
VINEYARDS & WINERY
Zinfandel
DRY CREEK VALLEY
SONOMA COUNTY
GROWN, PRODUCED AND BOTTLED BY PRESTON WINERY
HEALDSBURG, CALIFORNIA ALCOHOL 13.6% BY VOLUME

(l to r) John Clendenen, Lou Preston, Tom Farella

In addition to his own old vines, Preston is working with a couple of outside growers of select Dry Creek Valley Zinfandel—dry-farmed hillside vineyards between 30 and 60 years old—for future reserve vintages.

Grapegrowing

Viticultural practices are important at Preston Vineyards. According to John Clendenen, vineyard manager, techniques are adopted to optimize fruit flavors while keeping tannins, acids, and alcohol in balance. All Zinfandel vines are head-trained and spur-pruned to 2–3 shoots/spur; suckers are removed before bloom. The old vineyards were spaced 7x7; new plantings are 6x10.

Excessive bunches and all second crop are removed between early June and early July. Clendenen believes the timing of crop thinning is important. "Thin too early and the berry size of the remaining bunches will be greater than normal; too late and the second crop will draw vigor from the main crop and delay maturity." Second crop is not usually significant among the older vines.

All pruning, suckering, and thinning is designed to keep the vines open for best exposure to light and to provide sufficient air movement to prevent bunch rot. As an additional bunch-rot preventative, grape cluster location is checked and tightly-crowded bunches and the least advantageously positioned are removed.

Production is limited to 5 tons/acre maximum where vigor is high, 3.5 being the average for younger vines and about 1.5 for old vineyards. New vineyards have drip irrigation to promote rapid establishment. Early and excessive irrigation is avoided in order to keep berry size small. Recently-planted hillsides have been seeded with a permanent cover crop that is mowed rather than cultivated. The cover crop takes the early moisture, which helps to keep berry size small.

Spray practices are designed to keep chemical application at a minimum. For the last two years, a selective miticide, Zolone, has been used for control rather than eradication of mites and leafhoppers. Clendenen's experience has been that pests have developed a tolerance of the more general insecticide Dimethoate, and it is hoped that the change in practices will encourage the growth of predator mites.

The sulfuring routine has been to apply sulfur dust every 14 days for a total of 5 applications. In 1985, due to prolonged cool weather, mildew was bad enough to require spray-washing the affected vines with water and Bayleton, a tedious hand procedure.

The single most important quality variable at Preston is the timing of harvest. To select harvest dates, Clendenen and Farella take field samples and use the numbers to follow trends. "The numbers tell you how fast ripening is taking place," says Farella. "When your pH starts to rise suddenly, the integrity of the fruit is beginning to break down and overripeness is imminent. You try to anticipate that point and pick just before it for optimum flavor and balance."

Grapes are more often picked in accordance with their flavor than by the numbers. Rather than looking at the overall sugar or acid readings, which are an average of both over- and underripe fruit, Farella tries to assess the maturity of the median or normally-ripened berries. "You can't pick until these grapes taste right," Farella believes. His ideal window for picking occurs in the period before excessive raisining takes place (excessive usually being over 10%), but after flavor has developed.

"Choosing harvest dates for Zinfandel off old vines is especially difficult because of the markedly uneven ripening," says Farella. "Yet it is this same uneveness that contributes to the full-bodied richness of reserve Zinfandels. When the flavor in the normally-ripening berries is what you're looking for, and if the raisining isn't excessive, you've got a wonderful counterbalance between the creamy-rich, slightly shrivelled berries and the tart-tangy, underripe berries."

Winemaking

Fermentation practices at Preston Vineyards have evolved over the years to a preference for open-top 5-ton fermenters. The small batches facilitate manipulation of the cap and preserve the integrity of flavor characteristics from the many small vineyard blocks. The open tops help to keep the alcohol component at reasonable levels by partial evaporation.

The cap is punched three times/day for ½ hour each, and the grapes are pressed when the cap falls and the production of CO_2 has tapered off. The must at this time is usually between 1° and −1° Brix. After pressing, the wine ferments to complete dryness in stainless steel tanks, where it remains until July of the following year. Malolactic fermentation is induced by inoculation with ML 34 and the MCW isolate. The wine is racked four times during the eight months, and may be aerated through a screen during the first racking.

Wine for reserve consideration is racked into 500-gallon upright American oak tanks, where it remains until July, during which time it receives the same cellar treatment as the regular vintage. From the tanks, the wine goes into American oak barrels, either Kentucky Bluegrass or air-dried, fire-bent barrels from A & K Cooperage. During the year in barrels, the wine is racked once or twice more. "If the structure is tight, then we will rack a second time," Farella noted.

For the 1986 vintage, Farella experimented with submerged-cap fermentation as a means of achieving more extraction and fruit, and also used automatic pump-over devices on some tanks for comparison. Results have not yet been analyzed, but intuitively Farella prefers punching down. Acknowledging that it is the most labor-intensive method, he feels that breaking and stirring up the cap gives the most intimate contact between the floating skins and the must, and thus the best flavor extraction.

From the 1984 vintage, Preston Vineyards introduced a new light Zinfandel, labeled Zin II. "It's actually more light-hearted than light-bodied," says Preston. "It's styled and priced for the impulse buyer having spaghetti that night." Total production of both Zin II and regular Zinfandel in 1984 was about 4,000 cases. For 1985, Preston added the first of the reserve bottlings, about 300 cases.

Tasting Notes:

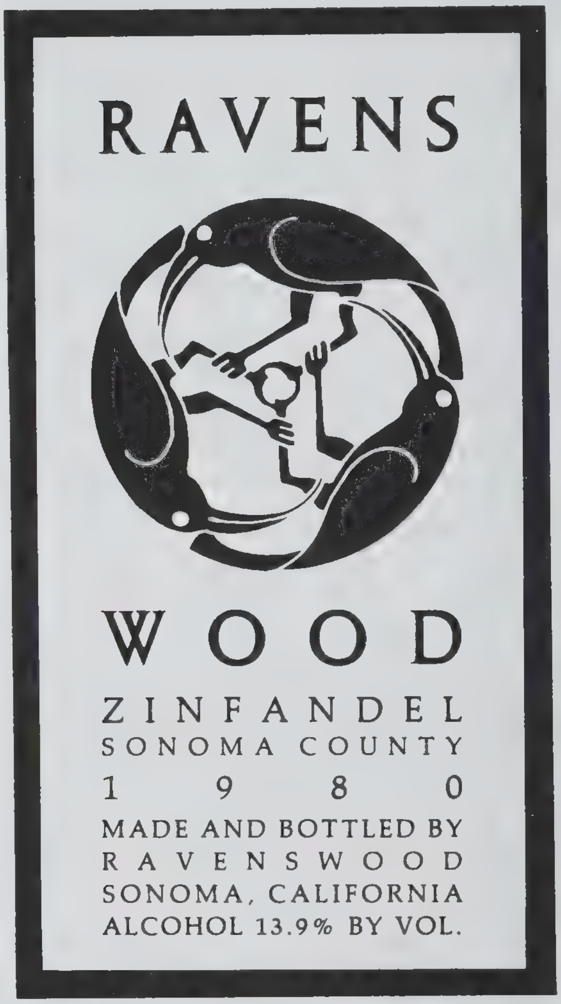
Preston 1981

Color/Aroma: Ruby; oaky, dill, berries, earthy, minty.
Flavors: Blackberry, oaky, olive, spicy.
Balance/Finish: Oaky, slightly bitter, rich finish.

Preston 1984

Color/Aroma: Light red; strawberry, raspberry, oak, medicinal.
Flavors: Mushroomy, bubble gum, floral, raspberry.
Balance/Finish: Good acid, slightly hot finish.

Joel Peterson



RAVENS
WOOD
ZINFANDEL
SONOMA COUNTY
1980
MADE AND BOTTLED BY
RAVENSWOOD
SONOMA, CALIFORNIA
ALCOHOL 13.9% BY VOL.

Ravenswood

Joel Peterson, owner/winemaker of Ravenswood, Sonoma, became interested in Zinfandel when apprenticing under Joseph Swan in 1975. In 1976, he started Ravenswood, and to day produces Zinfandel, Cabernet Sauvignon, and Merlot.

Peterson purchases Zinfandel grapes from three old dry-farmed vineyards: the Old Hill Ranch vineyard in Sonoma Valley; the Dickerson Ranch on Zinfandel Lane, Napa Valley; and one in Dry Creek Valley, Sonoma County. From the first two vineyards, a full-bodied vineyard-designated Zinfandel is made. "To produce vineyard-designated Zinfandel, the vineyards must have distinctive 'fingerprints'," Peterson believes.

In addition, a full-bodied Sonoma County Zinfandel is made, and a lighter-style Vintner's Blend, which is made from 70% purchased bulk Zinfandel and 30% from his own crushes. The Vintner's Blend is a light- to medium-bodied fruity wine that is fresh and drinkable at release—a Zinfandel for people not ready for full-bodied wines. The Vintner's Blend is given the same cellaring as the other Zinfandels.

Picking Criteria

For all vintages to 1985, fruit was picked in accordance with flavor, appearance, and sugar. Sugar has been about 22.5° Brix, with TA at 1.1 g/100mL and a pH of 2.96. Beginning with the 1986 harvest, Peterson has begun gathering pre-picking profiles of each vineyard. This profile consists of a thorough analysis of acids, which includes ratio of malic to tartaric, and pH.

Peterson is also interested in the shrivelling and raisining profiles of the vineyards. Although he doesn't mind if the full-bodied Zinfandels go over 14% alcohol, he doesn't want any raisin character in the wines. He intends the pre-picking profiles over the years to provide a clear picture of vineyard ripening patterns. For the 1986 vintage, the vineyards were harvested in two separate pickings as a means of balancing sugar level with flavor intensity. The first picking took place at 21.5° Brix, the second at 23°.

Regarding second crop fruit, John Kembell, Ravenswood partner, said, "Ravenswood asks that second crop not be picked. While we are in the vineyards for some of the harvest, we can't be there for it all, so we know that some second crop does get picked. Because all the vineyards Ravenswood buys from are old vineyards, second crop is never very big. However, even for years when the second crop was larger than usual, we haven't noticed any difference in our vintages. Second crop just isn't an issue for the vineyards we buy from."

Winemaking

Grapes are fermented in 4- to 4.5-ton open-top redwood tanks. For extra astringency, pepperiness, and tannins, 15% stems by weight are added back 'rough and dirty'. Vineyard yeasts are relied on to start primary fermentation. For the body and flavor of Ravenswood wines, warm fermentation is one of the keys. The juice temperature reaches 85°F, and may reach 90°F. This high temperature should be sustained for at least one week. The cap is punched 7–8 times/day to develop body and flavor. Thorough maceration of the cap helps maximize extraction.

At the end of fermentation, the wine settles for one week. At the end of this week, the cap has fallen. Natural malolactic fermentation has also taken place. The grapes are pressed hard, and the press wine is included in the blends. "Extended time on the skins," according to Peterson, "increases the extraction, the fruit, and softens the tannins. At the end of two weeks, the must will be very astringent; at the end of four, the tannins are hardly apparent."

Once pressed, the wine is put into French oak barrels, where it remains on the primary lees until March, when the first racking takes place. Three rackings follow during the first year, and in the second year, the wine is racked usually twice.

Racking is done with nitrogen, as Peterson is a firm believer in aerobic racking. "It keeps the fruit, adds complexity to the wine, softens the tannins, and helps bring out the wine's nose. Violent racking tears up the center of the wine. In addition, I like French oak because it imparts complexity and a soft vanilla character without imparting bitterness, as American oak can."

When the vineyard-designated wines are ready for bottling, Peterson selects one for the Special Edition wine, which is sold in hand-etched bottles. He never knows whether the Special Edition will be the elegant Dickerson Ranch wine, with its cedar/eucalyptus/mint/raspberry character, or the intense, dark, rich Old Hill Ranch wine, with its cracked pepper/blackberry character, until they are ready for bottling.

Ravenswood's Zinfandel production in 1985 totaled 600 cases.

Tasting Notes:

Ravenswood 1976

Color/Aroma: Red, some brick; toffee, minty, spicy, slightly fading, touch of VA.
Flavors: Roses, cherry, minty, candy, spicy, raspberry, raisiny.
Balance/Finish: Slightly bitter, oaky, tart.

Ravenswood Reserve—Dickerson Vineyard 1983

Color/Aroma: Ruby; cloves, mint, resin.
Flavors: Jammy, toasty, prunes, raisins, cherries.
Balance/Finish: Long, rich finish; late-harvest style.

Ridge Vineyards

Paul Draper prefers a full-bodied Zinfandel claret that will gain in complexity in the bottle for at least 10 years, achieving by then, Bordeaux qualities indistinguishable—even superior to—the finest California Cabernet Sauvignons. To consistently produce Zinfandel of this quality and character, Draper typically selects vineyards 40 years and older, and has worked with vines grown in the proven regions of Napa, Sonoma, and Amador counties, as well as vines from the Dusi ranch near Paso Robles.

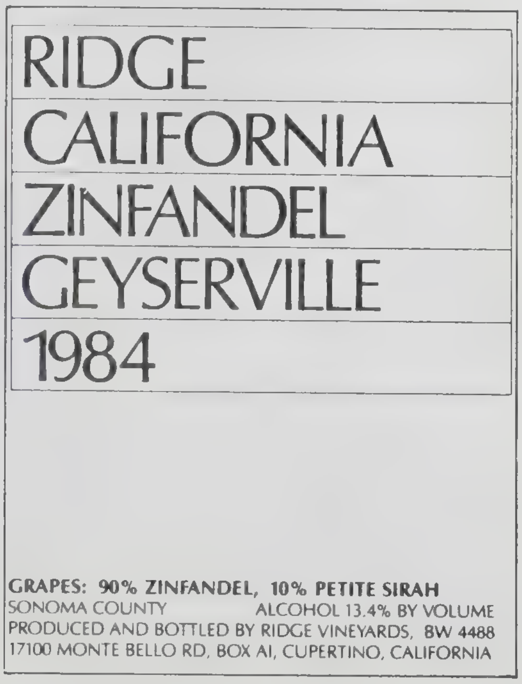
Ridge currently produces Zinfandel from the Spring Mountain (York Creek Vineyard) and Howell Mountain regions of Napa County; from the Geyserville region of Sonoma County; and from the Dusi Ranch. From 1974 to 1983, Ridge also made Amador Zinfandel from both the Fiddletown and Shenandoah Valley regions. Draper found the Amador Zinfandels, especially from the Fiddletown area, in good years to be very fine. However, since 1977, over 10 new wineries have been founded in the tiny 3-mile by 6-mile Shenandoah Valley. The demand of these wineries for local Zinfandel, together with the distance of Amador County from Ridge Winery, motivated Draper to concentrate on proven vineyards elsewhere.

"With Zinfandel," said Draper, "you have to know your vineyards. You have to watch your grapes like a hawk as harvest nears. The potential for overripeness with Amador Zinfandel is especially great, because of the climate and soil. I liked those grapes (although I doubt anyone would ever mistake a well-aged Amador Zinfandel for a fine old California Cabernet Sauvignon). But as the demand from the new local wineries for Amador Zinfandel increased, I felt they were in a much better position to successfully work with those vineyards."

Draper's ideal conditions for Zinfandel would be a location where the fruit achieves full ripeness and full flavor without grave potential for excessive shrivelling and raisining—not an easy criterion. Draper has found that the Napa and Sonoma vineyards most often yield fruit that meets that ideal. Because Zinfandel is slightly lower in tannin than Cabernet, a small percentage of Petite Sirah is often included, if it improves quality, in order to have additional backbone for long ageing.

Draper is especially pleased with the York Creek Vineyard (first crush, 1975); the Howell Mountain vineyards (first crush, 1979); and the Geyserville vineyard (first crush, 1966). All these 'Ridge Vineyards' Zinfandels, says Draper, have consistently shown the ability to gain in the bottle past five years. The Dusi Ranch Zinfandel (first crushed in 1967, again in 1976,

Paul Draper



RIDGE
CALIFORNIA
ZINFANDEL
GEYSERVILLE
1984

GRAPES: 90% ZINFANDEL, 10% PETITE SIRAH
SONOMA COUNTY ALCOHOL 13.4% BY VOLUME
PRODUCED AND BOTTLED BY RIDGE VINEYARDS, BW 4488
17100 MONTE BELLO RD, BOX AI, CUPERTINO, CALIFORNIA

and every year since) more typically matures fully within the first five years.

For an in-depth report on Ridge's vinification of Zinfandel, please see *PW* March/April 1984.

Tasting Notes:

Ridge Geyserville 1973

Color/Aroma: Brick; aged, pruny, caramelized, resiny.
Flavors: Rich, smooth on palate, raisiny, raspberries, oak.
Balance/Finish: Long finish, tannin still evident, at or slightly past its peak.

Ridge Geyserville 1984

Color/Aroma: Medium ruby; oak, peppery, cherry, berry.
Flavors: Sweet, rich, fruity, toasty.
Balance/Finish: Long finish, good balance, but heavy char.

Joseph Swan Vineyards

Joseph Swan, in Forestville, near the Russian River, made his first Zinfandel in 1968 as a home vintage. In 1969, Joseph Swan Vineyards was started, and Zinfandel was Swan's first commercial release.

Swan's love affair with Zinfandel began a few years earlier when he had the privilege of tasting a Sonoma County 1937 Fountain Grove wine. Upon tasting this well-aged Zinfandel, Swan realized that Zinfandel could make a first-class red table wine. "The 1937 Fountain Grove was my idea of the perfect Zinfandel," said Swan. "The alcohol was between 12 and 12.5%, and it had perfect balance of all the components. The fruit was still there, too, but as a part of the whole effect."

Grapegrowing

Until 1985, Swan used grapes from Dry Creek Valley and the Windsor area. In 1985, he began using grapes from a regionally-cool hillside vineyard near the winery on soil called Gold Ridge loam. This vineyard is about 75 years old, head-pruned to two buds/shoot, and produces under 2 tons/acre.

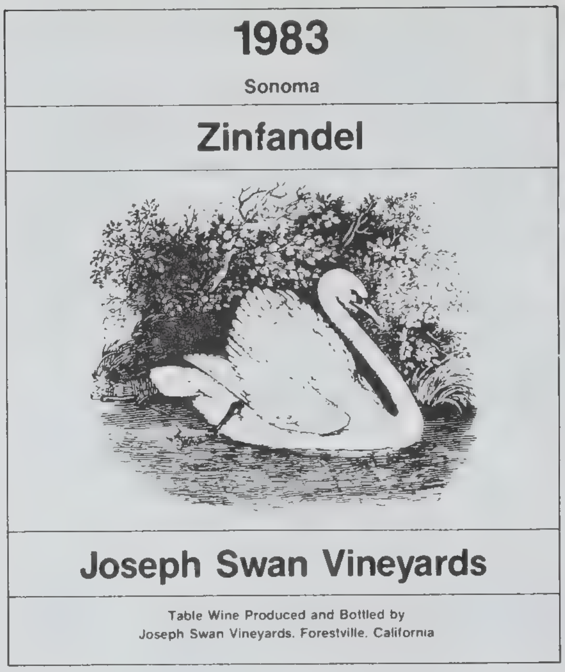
Since 1980, Swan has 'lightened up' his approach to Zinfandel, seeking to produce a wine with 12–13% alcohol, rather than 13–14%. At the same time, however, he wants a full-bodied, full-flavored wine. To keep the alcohol level down, grapes are picked when a field sample reads between 21 and 21.5° Brix. This soaks out to 22–23° Brix in the tank with a total acid between 0.90 and 0.95 g/100mL, and 3.1 pH.

Swan has shifted to a less alcoholic Zinfandel because he has found it to be a more elegant complement to food. In order to prevent excessive acidity in the finished wine, the grapes are analyzed with an organic acid profile to determine the ratio of malic to tartaric acid before picking. If the percentage of malic is high, the grapes are allowed to ripen further. (During malolactic fermentation, the acidity will not drop sufficiently to achieve the desired balance if the ratio of malic to tartaric is high.)

Winemaking

As one means of getting the extraction for full body and flavor in his less alcoholic Zinfandel, Swan's approach to winemaking has shifted from Bordeaux style to Rhone/Burgundian. In Bordeaux, no stems are used; in the Rhone, 100% stems are used. Swan is in between, using 50% stems by weight. "I put 35% whole clusters on the bottom of the fermenters," said Swan, "then 15% lightly-crushed berries on stems. The last 50% are crushed, de-stemmed berries." A Demoisey crusher-stemmer is used which allows grapes to be lightly crushed and not destemmed.

Fermentation is in open-top redwood fermenters, and the skins are allowed to soak two days before inoculation with Epernay II active-dry yeast at 1% inoculum on one side of the fermenter. That starts the fermentation slowly, and it progresses slowly. Extended fermentation, he feels, maintains the fruit while getting more extraction.



1983
Sonoma
Zinfandel
Joseph Swan Vineyards
Table Wine Produced and Bottled by
Joseph Swan Vineyards, Forestville, California

Joe Swan

As an additional measure to preserve the delicate flavors, the maximum juice fermentation temperature is under 88–90°F. This maximum begins to drop slowly when the whole berries on the bottom begin to ferment—usually when the sugar is between 6° and 8° Brix. "Excessive heat will burn out your fruit," believes Swan, whether it is in the vineyard or in the fermenter. "Zinfandels that have fruit, together with adequate acid and tannin, are the ones that will age beautifully in the bottle for 10 years or more."

As a further measure to get the tannin and other extractions, the cap is punched three times/day. The wine stays in the fermenter until the cap falls—usually about three weeks. Zinfandel is never filtered and rarely fined. If the wine has been properly balanced during fermentation, Swan feels, there is no need for further treatment.

At the end of primary fermentation, the wine is aged in 60-gallon French oak barrels. During this stage in the cellar, the wine goes through a complete induced malolactic fermentation. When malolactic is complete, 50 ppm SO_2 is added. During five rackings, the wine is rotated through different barrels to prevent barrel differentiation. After 18–20 months in 60-gallon, mostly older French oak cooperage, the wine is bottled, and held for one year before being released.

Swan's 1984 vintage is the Zinfandel currently showing the most promise of being his 'perfect' Zinfandel. Its alcohol is 12.6%, with a TA of 0.66, and 3.59 pH. He describes it as having a rich, dark ruby color, an aroma of red raspberries and light pepper, and lush fruit flavor. "It has great potential," said Swan. "In 10 years, this could be as fine a wine as the best California Cabernets." Joseph Swan Vineyard produces over 600 cases of Zinfandel annually.

Tasting Notes:

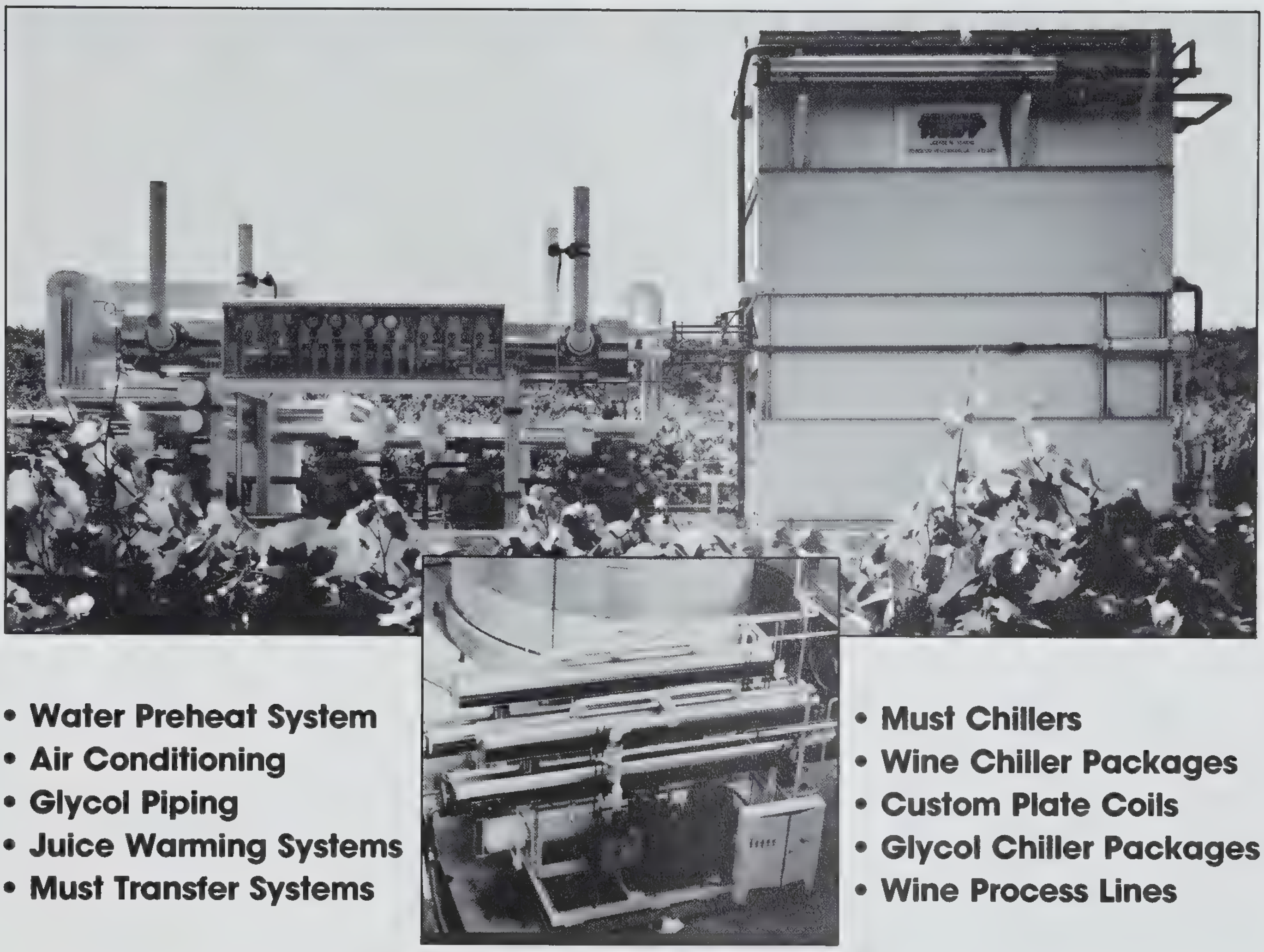
Swan 1983

Color/Aroma: Lighter red, some brown; brambleberry, raspberry, French oak vanilla.
Flavors: Strawberry, vanilla, spicy.
Balance/Finish: Tart, medium finish, lighter style.

Swan 1984

Color/Aroma: Medium-dark red; brambleberry, cherry brandy, nutmeg, cinnamon.
Flavors: Cherry, leafy, raspberry jam, coffee.
Balance/Finish: Long finish, will improve over the next few years.

The names to trust for refrigeration



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Thermo Systems Inc.

Barrel Preparation and Maintenance

Mel Knox

As a barrel broker, I am often asked questions about how to prepare and maintain barrels. My usual answer is "I don't care what you do as long as your check is good," or "If I tell you and something goes wrong, will you blame me?" Sometimes I suggest putting wine in them, but that's usually about as far as I go.

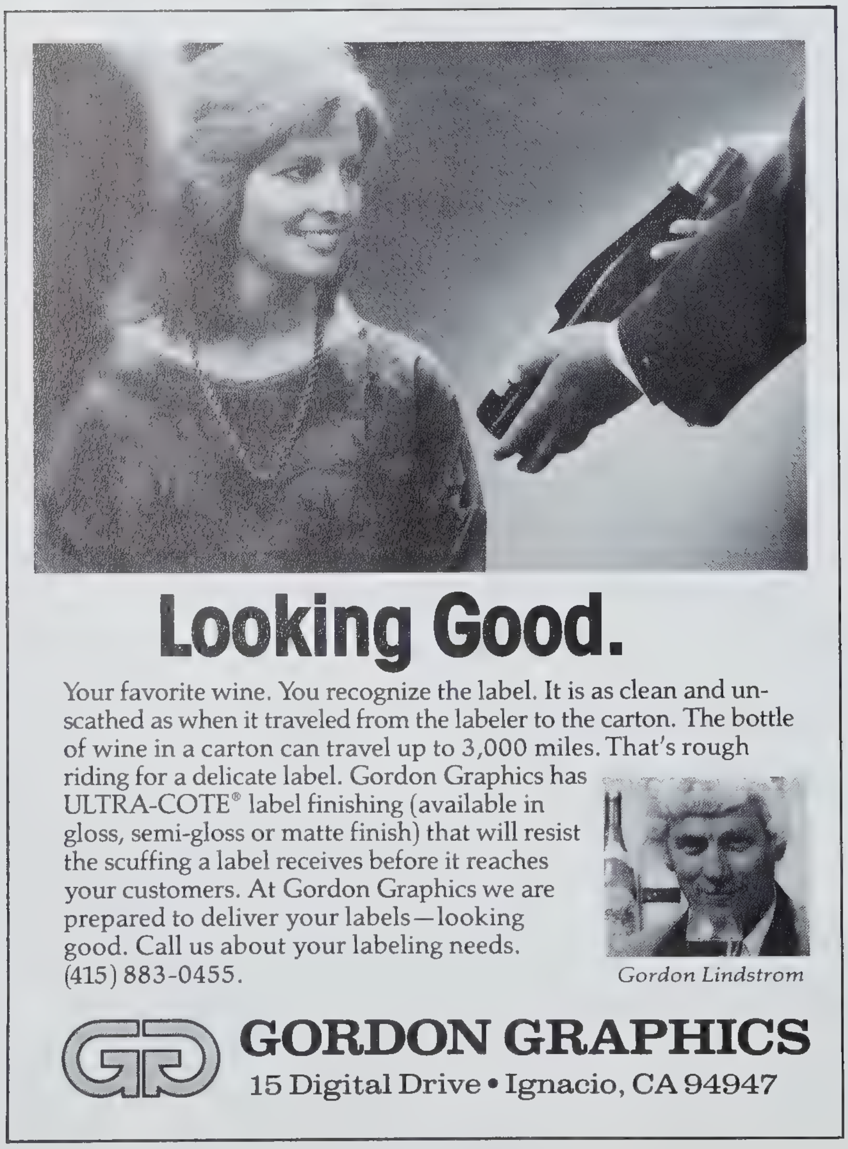
Recently, I interviewed two winemakers with a great deal of experience in barrel management, Russ Rosner at Robert Mondavi Winery, Oakville, CA, and David Ramey, winemaker at Matanzas Creek Winery, Santa Rosa, CA.

MK: What do you do with new barrels before filling them with wine?

DR: In 1986, we filled them with hot (160°F) water for 12 hours—160°F average because the temperature varies between 140°F and 180°F.

We also conducted trials with 12 hours of hot water, 12 hours of cold water, a one-minute hot-water rinse, and no treatment at all. I think we will go to either an overnight cold-water fill or to a short hot-water rinse. We use a high percentage of new barrels here and I find 'no treatment' gives coarser wines, although Jean François, the cooper, preferred them in a tasting we did together.

Disadvantages of hot water include extraction of color and tannin. Also, it is less energy-efficient. It may also be that hot water opens up the wood, allowing the wine to extract more oak.



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MK: What about leakers?

DR: With barrel fermentation, I find that soaking is not necessary, because the juice is like glue.

MK: When do you empty the barrels?

DR: Chardonnay comes out of the barrel in May. The barrel is then rinsed. We notice that with lees stirring, there is less tartrate formation on the sides of the barrel. We now do a hot-water rinse with 80 pounds of pressure at around 180°F. If a few tartrates are left, they will dry out during storage, and be rinsed off prior to refilling. Perhaps with greater lees stirring, only a cold-water rinse will be necessary.

We then drain the barrels 1–2 hours before rolling them upright. This is an advantage of barrel pallets; barrels can be rolled upside down to drain. We then give them two seconds of SO_2 gas. Thirty minutes later, we roll the barrels back so that the bunghole is down, and then put the barrels into a cool place.

We re-sulfur with gas and re-inspect the barrels every 6–8 weeks.

MK: Dave, you have a humidity- and temperature-controlled barrel room. What would you do if you had your barrels in a warm, dry room?

DR: We have too big an investment not to have temperature and humidity control. A winery with 1,000 barrels has $350,000 in barrels alone, not to mention the wine.

Temperature affects the integrity of barrels, and low temperature inhibits microbial growth. A bunged-up barrel creates a humid atmosphere that promotes microbial growth, especially at high temperature.

When you have temperature and humidity control, a winery can reduce evaporation loss and promote slower and steadier development of the wine, thus producing fresher white wines and maintaining barrel integrity.

MK: What do you do when you go to re-use these barrels?

DR: Traditionally, we soaked them up the night before with hot water, but we may be switching to a 12-hour soak with cold water, or a hot-water rinse, or to no treatment at all. Because there is no SO_2 in the barrels, the soaking is not as important as before.

MK: What would you do if you had a problem with volatile acidity in a barrel?

DR: A one-day soak with hot water (160–180°F) usually removes the problem.

MK: Could you discuss barrel management techniques you recently observed in France?

DR: The traditional technique in Bordeaux is to rinse, drain, and sulfur, then re-sulfur eight days later. The barrels are bunged up at that point, on the assumption that they are dry.

MK: What about leaving wine in barrels?

DR: At several wineries, people rinse the barrels with water or wine to clean out the lees, then they leave the empty barrel with a thin coating of wine, sulfured.

At Olivier Leflaive's, they sulfur empty but not rinsed barrels. They leave the barrels open, and then in two weeks they re-sulfur and bung up. Then they re-sulfur every six weeks. Water never touches the barrels. If low pH inhibits microbial growth, then water would push the pH up to 6 or 7 and could create conditions for microbial growth.

MK: Of course, their cellars are usually cooler and more humid than in the U.S.

MK: *Comments after smelling empty barrels in Matanzas Creek's cellar.*

Barrel 1: 16 days after emptying: Very sweet.

Barrel 2: This barrel was a worst-case situation. It had been empty for one year. Previously, it had had a VA problem which had been treated with soda ash. It had been last sulfured two months earlier and had a faint odor of VA, which a subsequent hot-water soak removed completely.

Barrel 3: Empty of Merlot for five weeks, smelled nice.

Barrel 4: Barrel-fermented Chardonnay. Empty two months—smells great, let's have a glass!

Russ Rosner, production enologist at Robert Mondavi since 1983, worked previously with Felton Empire Vineyards and Rombauer Vineyards, both in California. Rosner has been the barrel enologist for the past two years and deals with the wines as they are ageing in barrels and also with the barrels themselves.

MK: How do you prepare new barrels?

RR: Our standard preparation method is a cold-water soak. We fill and soak the barrels for about two days, and fix any leaks that appear. The heads are mildewcided to help prevent end-grain leaks and to retard mold growth. Information cards are stapled to the front and back. The barrels are emptied and sulfured, and are ready to be filled. They will be stored open until filling.

In the last couple of years, we have been doing trials using hot water. The barrels are filled with about 15 liters of hot water (about 180°F), bunged tightly, and agitated. The agitation builds up pressure in the barrel and reveals any leaks. The barrels are then allowed to stand on each head for about 20 minutes, and, as the water cools, it tends to pull a vacuum and draw the staves tight.

Our thinking is that hot-water processing can be useful for toning down the oakiness of a new barrel, but we are not yet convinced that it really does. This past year, we processed a significant number of the new barrels by the hot-water method to try to test that hypothesis.

Seguin-Moreau, a French cooperage, has done studies of extraction curves with various forms of treatments: cold soak, warm water, steam, hot water, etc. They have shown that each method does remove (or leave), differing amounts of tannins, aldehydes, furfural compounds, and other chemical constituents, but it is still too early to draw any conclusions from our own trials.

MK: Does the hot water remove the toast?

RR: Surface charring or smoke residue may be removed, but we think that if the toasting is done slowly so that it penetrates deeply into the staves, the toasty character will be retained.

Besides the possible differences in barrel character between hot and cold processing, there are definite logical advantages and disadvantages to each method. Cold-water treatment calls for space, but is less labor-intensive. Hot water is just the opposite; it takes very little space, but requires constant attention. If a large number of barrels is needed quickly, hot water would be the method of choice, since we could allocate more people to the processing; personnel, not space is the limiting factor.

The most important question is "Which method is better for the wine?" Certain wines may be better-suited to barrels which have been processed by a certain method, but if we find that there is no significant difference, then it merely becomes a matter of logistics and economics.

MK: You have humidity and temperature control in your barrel storage facilities. How does this help you?

RR: We keep the humidity at about 85–90%, and the temperature at about 55–60°F. For full barrels, this is important for preventing or inhibiting microbial growth in the wine. It also enables us to minimize evaporation and wine loss. Finally, it can help (in a fairly minor way) to influence wine alcohol; at above 60% humidity, there is preferential evaporation of alcohol over water, whereas below 60%, there is more water than alcohol evaporating. Admittedly, this is not nearly as important as harvest sugar for determining alcohol, but it does enable one to slightly lower the alcohol during ageing, rather than raising it.

The benefits of temperature and humidity control for empty barrels are that they tend to not dry out and loosen up, and also that we can store them open with very little SO_2. In addition, because the barrels are so low in SO_2, when the time comes to fill them, we need only to briefly rinse them, rather than having to fill and soak them with water.

MK: What do you do when you empty barrels?

RR: After emptying the barrel, it is rinsed with cold water, unless it is caked with lees. In that case, we use a pressure washer. After being drained for fifteen minutes, the barrel is rolled upright and gassed with SO_2 for two seconds. A paper cup closure keeps the SO_2 in the barrel. The barrels are then

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shipped to the warehouse. The closure is then removed and the barrels are rolled to the straight-down position to drain for a full day. They are then rolled outwards to what we call the 'PSRA' (production scale re-sulfuring angle, which is 45° from straight down), and put into stacks.

This allows us to do the re-sulfuring in place by a person on a scissor-lift; formerly the barrels had to be taken down out of the stacks, which was much more labor-intensive. The barrels are left open for four weeks before re-sulfuring, and there is very little SO_2 detectable after the first two or three days.

Until very recently, we would then re-sulfur every four weeks. We have just changed our procedure to allow for re-sulfuring every eight weeks: the barrels are gassed and closed up for two weeks, then the closure is removed and they are left open for another six weeks before being re-gassed. We have found that if the barrel is closed up for more than two weeks, we can get some development of VA.

We used to store the barrel closed up with a quarter stick or more of sulfur for six weeks, and at each re-sulfuring, the barrel would be rinsed. We tended to have problems with VA formation with this system, which we think is related to the barrel being stored damp.

It is possible that there are two types of VA formation: microbial and chemical. Microbial is, of course, related to acetobacter activity. Chemical VA can result when the SO_2 in a wet barrel reacts to form sulfurous acid, which can then react with the phenolic polymers in the wood to form acetic acid and ethyl acetate. The key seems to be able to store the barrel open, which lets it remain fairly dry. Both types of VA formation would seem to be dependent on moisture, so if you can allow the barrel to stay dry, you should be able to minimize problems.

Since we have gone to open storage, we get almost no VA. Very occasionally, we see a moldy barrel—perhaps because the barrel was missed at re-sulfuring or did not get enough gas. We have found that there can be a fluctuation in the pressure in the gas cylinder when gassing a large number of barrels very quickly, so some barrels may not get the proper amount of gas. We are investigating an SO_2 vaporizer unit, which heats the gas to give a more consistent flow and better dispersion.

It is important to remember that open-bung storage is a total system. It may not work unless all the various parts are done, especially the temperature and humidity control. We are constantly trying ways to improve our storage system; some of the factors we are looking at are the re-sulfuring interval, the amount of gas, storing washed vs. unwashed, etc. It appears that unwashed barrels may store better than clean barrels, for example. Is it the alcohol from the residual wine? The pH? These are some of the questions we are trying to answer.

MK: What do you do before re-filling?

RR: All barrels are washed before being refilled. Currently, they get 3–4 minutes of 180°F with soda ash, primarily for tartrate removal. Then they get a cold-water rinse, followed by 1–2 minutes of citric acid solution, and then another cold rinse. The next thing we are going to look at is trying to eliminate the use of chemicals; it may be that hotter water (200–210°F) and high pressure will be enough to adequately sanitize the barrel.

Further comments: Russ pointed out that not only did the open barrel storage program yield fewer VA problems, but that extending the gassing interval and thereby using less SO_2 overall helped to reduce the amount of SO_2 in the air.

SHAPELY BOTTLES

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Hock - 375ml, 750ml, 1.5L

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WHAT'S AVAILABLE FROM

Barrel Manufacturers, Brokers, and Suppliers

Cooperage purchasing decisions got you over a barrel? Do you stave off making the decision as long as possible due to lack of information? Do you let things come to a head before finally making that decision? Do you wish we'd quit with the bad puns and get down to business?

OK, here's what to look for. First of all, where does the wood come from? French oak imparts a different character to wine than American oak. Limousin oak imparts a different character than Nevers oak, and both will differ from Allier. Using the information below can help you determine which characteristics you desire in your wine.

How is the wood treated? Are staves air-dried or kiln-dried? Such factors can affect the integrity of the barrel. What toast level do you want? Light, medium, and heavy toasts will, again, impart different characters to your wine.

What about sizes and styles of barrels? Depending on the amount of oak character you want in your wine, a 500L puncheon may be more appropriate than a 225L barrel.

Once you've answered these questions, you're ready to make a purchasing decision. Remember, a barrel is not only a wooden container; it is also a wine-enhancer. The ageing of a wine in a barrel is an important chapter in a wine's life. This chapter is affected by the winemaker's careful choice of oak, the degree of toast, and the cooper. *PW* hopes that the following guide will help you in reaching that decision.

Utilization of French Wood Types According to Varietal

Vincent Bouchard
Les Tonnelleries de Bourgogne

Note: This is valid only for wood which is split, air-dried, and charred exclusively with oak fire.

Limousin

(Open Grain)

Limousin wood perfumes and colors the wine rapidly with little finesse. It is aggressive and harsh with a sharp finish in the nose and on the palate.

Primary Uses:

Charring: Very heavy, preferably blistered
Varietals: Cognac, Brandy, Port, Sherry, Marc, Fine, other distilled alcohols

Alternative Uses:

Charring: Medium to slightly heavy
Varietals: Cabernet Franc, Cabernet Sauvignon, Carignane, Grenache, Syrah, Zinfandel
Charring: Med. light to medium
Varietals: Chardonnay (not recommended), Sauvignon Blanc

Nevers

(Average Grain)

Nevers wood gives a vanilla flavor and balance to the wine. It is round in the nose and on the palate, and has a short finish.

Primary Uses:

Charring: Medium to medium-heavy
Varietals: Cabernet Franc, Cabernet Sauvignon, Carignane, Grenache, Syrah
Charring: Medium-light
Varietals: Sauvignon Blanc

Alternative Uses:

Charring: Medium to medium-heavy
Varietals: Gamay, Pinot Noir
Charring: Medium to medium-light
Varietals: Chardonnay

Bourgogne

(Average Grain)

Bourgogne wood gives a vanilla flavor and balance to the wine. It is round in the nose and on the palate, and has a short finish.

Alternative Uses:

Charring: Medium to medium-heavy
Varietals: Pinot Noir, Gamay
Charring: Medium to medium-light
Varietals: Chardonnay, Sauvignon Blanc

Tronçais

(Tight Grain)

Tronçais wood releases its perfumes slowly with finesse. It has a long finish in the nose and on the palate, and is more aggressive than Vosges.

Primary Uses:

Charring: Medium to medium-heavy
Varietals: Pinot Noir

Alternative Uses:

Charring: Medium to medium-light
Varietals: Chardonnay, Pinot Gris

Allier

(Tight Grain)

Allier wood releases its perfumes slowly with finesse. It has a long finish in the nose and on the palate, and is more aggressive than Vosges.

Primary Uses:

Charring: Medium to medium-heavy
Varietals: Gamay, Pinot Noir

Alternative Uses:

Charring: Medium to medium-light
Varietals: Chardonnay, Pinot Gris, Sauvignon Blanc

Vosges

(Tight Grain)

Vosges wood releases its perfumes slowly with finesse. It has a long and very delicate finish on the nose and on the palate.

Primary Uses:

Charring: Medium to medium-light
Varietals: Chardonnay, Pinot Meunier (Champagne)

Alternative Uses:

Charring: Medium to medium-light
Varietals: Sauvignon Blanc

QUICK REFERENCE

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on page 79.

PRACTICAL WINERY BOOKSHELF

Barrels and uprights available from Demptos Napa Cooperage (l); oval cask made by Tonnellerie Radoux and sold by Demptos Napa Cooperage (c); and uprights from Tonnellerie Vicard and barrels from Les Tonnelleries de Bourgogne (r).

Barrel Builders

Serving the wine industry for over 12 years, Barrel Builders offers French and American oak barrels, barrel and tank shaving, retoasting and repair, and tank manufacturing and assembly.

Boûtes & Cie.-brand French oak barrels are made in Brive la Gaillarde, 110 miles NE of Bordeaux, in a small, family-owned cooperage. The oak comes from forests in the center of France, primarily from the Allier district, although Limousin oak is also available. The 27mm-thick staves are air-dried two years, then hand-selected to be formed into barrels over oak fires, with a light to medium toast level.

Six heavy galvanized hoops finish the barrels for long-lasting durability before they are tested, sulfured, and plastic-wrapped for shipment. Owner Henri Barthe makes barrels in 112L, 225L, and 500L transport style, and 225L Bordeaux Château style. Boûtes barrels have been sold in the U.S. and other countries for 15 years.

American white-oak 52-gallon barrels are made in Lebanon, KY, by Kentucky Cooperage. Owner Tom Humphrey obtains stave blanks from mills primarily in Missouri, air-dries them for a minimum of 9 months, then kiln-dries them to the proper manufacturing humidity level. After the staves are bent in a steam chamber, the barrels are placed on an oak fire 20–30 minutes to 'set' the correct curvature and give a light toast. Eight galvanized hoops are then added. Besides the bourbon-style barrel, a 'French style' with a longer chine is also available.

Barrels from Boûtes and Kentucky Cooperage have a one-year warranty against leakage from Barrel Builders.

Two machines are available to shave barrel sizes from 30 gallons to 150 gallons. The machines are equipped with high-speed industrial routers mounted on hard plastic base plates. The routers cut away 1/16" - 3/16" of spent surface oak, exposing new oak. The plates ensure a smooth finished surface. Heavy-duty sanders clean up around the croze and any low spots missed by the router. Both heads are machine-planed. If desired, retoasting can be done by the traditional open oak fire or by a propane torch.

In addition, Barrel Builders can shave and repair tanks. Replacement woods are supplied and the correct equipment is used to repair small leaks or replace staves or headboards in both barrels and tanks. Tank assembly, either American- or French-oak styles, placement, and installation of fittings are other services offered.

Barrel Builders manufactures wine tanks of American white oak from Indiana in sizes from 500–2,000 gallons. These tanks have side manways and galvanized rod hoops.

Cooperage supplies, including silicone, redwood, and fir bungs, mildewcide, wet surface liner, sulfur wicks, hoop nails and spiles, hoop drivers, and a barrel repair manual to help with in-house repairs, are available.

Inquiries to: Barrel Builders, 1085 Lodi Lane, St. Helena, CA 94574, (707) 963-7914.

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The Boswell Company

When you've seen one French oak barrel, have you seen them all?

Just as a professional winemaker knows that his wine is unique, a good professional cooper knows that his barrels are unique. Proper raw material selection, natural ageing, and skilled manufacturing techniques are crucial to quality wooden barrels and tanks.

Jean-Christophe Varron, manager of Tonnellerie Radoux, offered the following comments.

What makes your organization unique?

Radoux controls the oak from standing tree selection to finished stave. Our president, Christian Radoux, spends six to seven months/year in the forests evaluating and purchasing

8,500 cubic meters of quality timber. At Antignac, our splitting unit of 18 men transforms the raw material into enough 'merrain' (hand-split staves) to supply Radoux's global production.

To give you an idea of the importance of our oakwood operation and strategy, Radoux derives 30–40% of total income selling stavewood on the French market and overseas. This is one of our greatest strengths–we control every piece of wood in our own barrels and guarantee origins such as Allier, Nevers, Limousin, Tronçais, Vosges, etc.

What about your craftsmanship in manufacturing barrels?

Tonnellerie Radoux originally established a reputation in France and California with uprights, round casks, and ovals. The ability to produce this kind of larger cooperage demands tremendous skill.

Currently, 12 coopers at Jonzac build our tanks and average about 27 barrels/day. We intend to remain a medium-sized workshop where equivalent care and dedication to quality exists for both small barrel and tank production.

Every three years in France, there is a prestigious national competition to determine the best worker in each craft; in the 1986 competition, one of our master-coopers, Christian Daniez, was awarded a gold medal for 'Meilleur Ouvrier de France'. This type of effort is typical at Tonnellerie Radoux.

Are there any other reasons why U.S. winemakers should consider Radoux oak barrels?

Tonnellerie Radoux is responsive to customer requirements regarding barrel shape, hooping, stave thickness, and toast levels. We produce 228L Burgundy, 225L Bordeaux export, and 225L Château-style barrels to specification. The heating of Radoux's house toast is done slowly from coals and not flames. Light, medium, and heavy toasts are available.

From a practical and financial point of view, Radoux offers a fixed dollar price as well as French franc price. Tonnellerie Radoux will make every effort to provide consistently high-quality cooperage. We will take the same pride in working with our American clients as with our French clients.

Tonnellerie Sirugue Tonnellerie Sirugue was probably the first French cooper to export barrels to California in the late 1950s. Located in Nuits-Saint-Georges, Burgundy, for three generations, Sirugue is a very small cooperage producing exclusively 228L barrels.

Yves Sirugue and five workmen produce about 10 barrels daily. Sirugue barrels are built of stavewood weather-dried for a minimum of two years. Oakwood origins may include Burgundy, Allier, Nevers, or Limousin. Tonnellerie Sirugue's house toast is relatively light and achieved by traditional dry-firing.

Export Burgundy barrels are equipped with eight galvanized steel hoops. Traditional Burgundy barrels feature six galvanized steel hoops and eight chestnut bark hoops.

In the United States, virtually all Sirugue barrels are utilized for Chardonnay or Pinot Noir ageing. Due to demand and limited production, Tonnellerie Sirugue inventories no barrels.

Inquiries to: The Boswell Company, 36 Crane Drive, San Anselmo, CA 94960, (415) 457-3955.

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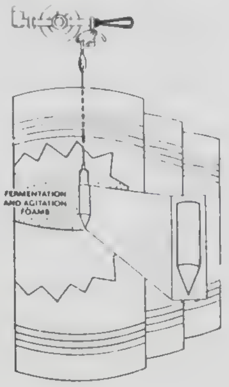

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turing firm of Bluegrass Cooperage for those needing American oak barrels. The Bluegrass barrel has long been known for classic American oak flavors and dependability while maintaining a reasonable sales price.

Custom Cooperage is also the exclusive representative for the oak flavoring invention Innerstave. Innerstave works by matching the original surface area of the interior of a barrel or tank with new oak pieces. The amount of new oak surface area exposed to the wines is 10% more than in a new barrel. Your wine gets the same oak character that it would have received had you purchased expensive new barrels. Innerstave costs only 20% of the price of a new French oak barrel.

Innerstave's flavors will vary with the wood types and toast levels you choose. Limousin, Tronçais, Allier, Nevers, Vosges, and Jupille oaks are available, as are exact toast levels according to your specifications.

Availability is another factor of Innerstave. A standard Innerstave can be manufactured from current stocks of French oak within 1–2 weeks.

Shaving of barrels, tank set-up, repair of barrels and tanks, and reconditioning or manufacture of any barrel- or tank-related product are all available from Custom Cooperage. As with any product offered by Custom Cooperage, we guarantee satisfaction.

Inquiries to: Custom Cooperage, Bob Rogers, 1194 Maple Lane, Calistoga, CA 94515, (707) 942-6902.

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Demptos Napa Cooperage

In 1820, Tonnellerie Demptos began coopering French oak casks for the châteaux of Bordeaux. In 1982, Demptos Napa Cooperage began providing American winemakers with French oak casks crafted in the Napa Valley. Three-year-old, hand-split, air-dried French oak of Nevers, Limousin, Allier, Tronçais, and Vosges is used. From firingtime to toast level, Demptos Napa Cooperage follows the instructions of the winemaker.

In addition to coopering barrels, Demptos Napa imports finished barrels of 28–500 liters from its French counterpart, Tonnellerie Demptos of Bordeaux. These casks may be ordered to specification regarding toast level and style.

Demptos Napa also represents Dargaud & Jaegle of Burgundy. Dargaud & Jaegle barrels are available in oak from Nevers, Limousin, Allier, Vosges, and Tronçais in custom toast levels and sizes from 10 - 225 liters.

Uprights and ovals constructed by Tonnellerie Radoux can be ordered through Demptos Napa Cooperage. Many sizes and configurations are available for these Center of France oak ovals and tanks.

In addition to cooperage of all styles and sizes, Demptos Napa can provide portable barrel racks in 2-barrel, 4-barrel, and custom configurations for Bordeaux or Burgundy barrels. Other cooperage accessories include barrel washers, bungs of all types, and barrel maintenance tools.

All products manufactured and distributed by Demptos Napa Cooperage are warranted for a full year against defects arising from materials or workmanship.

Inquiries to: Demptos Napa Cooperage, 849 Jackson Street, Napa, CA 94559, (707) 257-2628.

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Mel Knox

Tonnellerie Taransaud in Cognac, France, is owned by Moet-Hennessey and is run by Jean Taransaud, whose family has been making barrels for centuries. Because of Moet-Hennessey's financial strength, Taransaud has the largest stock of wood in all of France. All wood used by Taransaud is guaranteed air-dried a minimum of three years. Visitors to the Bordeaux area are invited to visit the cooperage.

Taransaud makes tanks and ovals of all sizes; Taransaud uprights are made from Center of France oak. The company also makes 60-gallon barrels, using only hand-split Center of France and Limousin oak. Primarily export Bordeaux barrels are made, although Burgundy-shaped and Bordeaux châtelaise-style barrels are also available.

All barrels are shaped over a wood fire. Light, medium, and heavy toasts are available. Taransaud sells barrels in Bordeaux, Cognac, and the U.S.

François Frères, located in St. Romain in Burgundy, France, produces a Burgundy barrel, the *pièce de Bourgogne*, for customers in Burgundy, the Rhône, Italy, Australia, and the U.S.

Barrels are shaped over a wood fire. The following oaks are available: Allier, Nevers, Tronçais, Vosges, and Limousin. Toast levels vary from medium to heavy.

The wood for François Frères is air-dried 2–3 years. To assure itself of adequate supplies of wood, the cooperage has stave-splitters working for them in Nevers, the Vosges, and at the cooperage. Barrels should be ordered 4–6 months in advance.

Inquiries to: Mel Knox, 1229 Third Avenue, San Francisco, CA 94122, (415) 661-3413 or 661-1616.

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Sonoma Coopering Company

Sonoma Coopering Company, Santa Rosa, CA, is owned and operated by Greig Sayre. Primary services offered include barrel shaving and firing, and repair of barrels, puncheons, and tanks.

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The shaving machine is of recent design and can accommodate most barrels and puncheons used commercially. A router cuts through the spent surface of the barrel, exposing white wood. The shell is then sanded smooth inside. Large blisters which may have formed when the barrel was first made can be removed at this point. Barrel heads are machine-planed in the shaving process.

Barrels are fired with oak to the degree the customer desires. As the barrel is reassembled, flagging and other appropriate materials are used to eliminate leaks.

Greig Sayre has shaved barrels at some 20 wineries in California and Oregon.

Inquiries to: Sonoma Coopering Company, 265 Pleasant Avenue, Santa Rosa, CA 95401, (707) 838-2069.

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Stefanich

Stefanich, a family firm founded in 1933, is one of the oldest cooperage suppliers in California. Four French cooperages are represented by Stefanich, two from the Bordeaux/Cognac region, and two from the Burgundy region. All the oak cooperage supplied is hand-split and air-dried, with barrel staves bent over open fire. All barrels are equipped with galvanized hoops and warranted for one year. Oaks are from the forests of Limousin, Allier, Tronçais, Nevers, Citeaux, and Vosges.

Bordeaux/Cognac Cooperages

Tonnellerie Mercier specializes in Bordeaux and Burgundy export barrels and oak vats. Barrel staves are bent very slowly, taking twice the time usually given by other cooperages. This eliminates structural stress and cracking in the barrel because the staves are shaped when they are truly supple. The deeply-penetrating caramelization which results produces an exceptionally rich and flavorful barrel. All stages of the coopering are supervised by Francis Mercier, Maître Tonnelier. Tonnellerie Mercier selects its oak from the forests of Limousin, Allier, Tronçais, and Nevers.

Lafitte, an old cooperage which has never before exported to the U.S., is now offering the U.S. market Bordeaux Château and Bordeaux export barrels, as well as French oak vats equipped with stainless steel gates. Lafitte has also been known for many years as the leader in Tonnellerie d'Art, embodying the art of the tonnelier in miniature cooperage. Lafitte supplies oak from the forests of Limousin, Allier, Tronçais, and Nevers.

Burgundy Cooperages

Claude Gillet of Tonnellerie Gillet has been supplying cooperage to the domains of Burgundy since 1966. Gillet's unique style of 225L Burgundy export and Burgundy traditional barrels have never before been available in California. Much of the very dense and fine-grained oak is from the forest of Citeaux in Burgundy. Typical of Burgundian cooperage, Gillet barrels are fairly heavily toasted, which contributes to their richness and style. Limited availability.

For three generations, Tonnellerie Fremy has supplied 225L Burgundy export and Burgundy traditional barrels to the Burgundy region, but has never before been represented in the U.S. Monsieur Fremy selects his own oak, with a preference for fine grain coming from higher elevations. Fremy takes more time in shaping barrel staves than most cooperages, up to two hours. The result is a barrel which is surprisingly light inside, with all the richness and subtlety so typical of fine Burgundian cooperage. Limited availability.

Inquiries to: Stefanich, P.O. Box 77021, San Francisco, CA 94107, (415) 974-5526, telex 176008 STEFANICH SFO UD.

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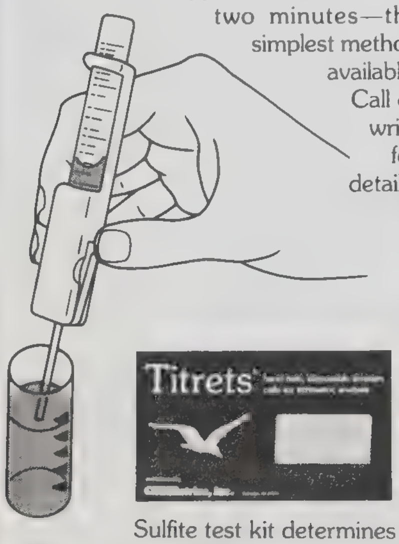

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Branding of barrels at Tonnellerie Française (l); Bob Rogers indicates position of Innerstaves in a wine barrel (c); barrel shaving at Sonoma Coopering Co. (r).

Les Tonnelleries de Bourgogne

Burgundy possesses many small cooperages, each of which usually employs about 15 workers. During the last 20 years, demand for foreign and French barrels for wine ageing has sharply increased. These two factors led, in 1967, to the formation of the Tonnelleries de Bourgogne group. This association has enabled Burgundian coopers to respond to the various demands of the export market.

In order to constantly improve their product, Les Tonnelleries de Bourgogne have made several changes in the past 20 years. They have eliminated two cooperages that did not match their quality standards, and they have recently introduced a new reputable cooperage from Cognac to widen the range of their products and maintain their quality.

In the Tonnelleries de Bourgogne group, there are now four cooperages: Damy in Meursault, Vicard in Cognac, Billon in Beaune, and Remond in Côte de Nuits. These cooperages craft their barrels following traditional methods:

1) The oak is chosen with careful attention to its origin: Limousin, Nevers, Bourgogne, Allier, Tronçais, and Vosges.

2) The wood is exclusively split by hand to avoid too much oxidation and too quick an extraction of tannins. Hand-split wood also makes the barrels stronger and less likely to leak.

3) The oak is air-dried at least two years to reduce sappiness and consequently any herbaceous taste.

4) The barrels are toasted for approximately 45 minutes over a fire of more or less even intensity to obtain a light, medium, or heavy toast. This amount of time is necessary for the transformation in depth of the aromas of the wood. A faster toasting would change the color and flavors of the wood only at its surface.

Sizes include 228L Bordeaux and Burgundy Château, 57L (15-gal) export and Château, 114L (30-gal) export and Château, 228L (60-gal) Bordeaux and Burgundy export, and 300L (78-gal) and 350L (90-gal) export.

Despite generally similar traditional methods of barrel-making practiced for generations by the members of Les Tonnelleries de Bourgogne, the organoleptic qualities of barrels from each producer vary. These differences come from each cooper's specialization in the crafting of barrels for wineries of a particular area.

When contacting the Barrel Suppliers – remind them you saw their listing in

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These differences constitute another important reason for the association. Each customer can choose within the Tonnelleries de Bourgogne group the cooper that offers the most appropriate flavors and qualities for the wine to be aged. To distinguish one cooperage's barrels from the next, the coopers stamp and sign each barrel.

If you would like more information or advice about the ageing of your wines, please contact our export manager, Vincent Bouchard. He is at your disposal to answer any questions you might have.

Inquiries to: Vincent Bouchard, 1525 Stockton Street, St. Helena, CA 94574, (707) 963-0541; or Les Tonnelleries de Bourgogne, 2 Rue de Bellevue, Beaune, 21200 France, Tel. 80.22.01.24.

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Tonnellerie Française

Barrels manufactured in the 'old French traditional method', using European equipment, have been produced by Tonnellerie Française in Calistoga, CA, since 1980.

Cooperage is manufactured from French and American oaks. French oaks, including Nevers, Limousin, Tronçais, Vosges, and Allier, are used as well as the American oak Quercus Alba. The American oak is air-dried 18+ months and the French oak is air-dried three years.

Barrels from the same choice of French oaks manufactured by Tonnellerie Ludonnaise, S.A., in France, are distributed by Tonnellerie Française. Workmen from the French company select the wood in the forests for their cooperage, split the staves, and ship the wood to the cooperage or export to Tonnellerie Française. Winemakers receive a 'Certificate of Origin' which notes the specific forest their barrels came from when requested at order.

Barrels are 225L and made in the Bordeaux style with six galvanized hoops and toasted to order–light (blonde), medium (milk chocolate), or heavy (dark chocolate). Eight hoops are standard on the American oak cooperage. French staves are hand-split, American oak is quarter-sawn.

Custom-order sizes between 110L and 500L, and 500L puncheons, can be made in Calistoga. Other common sizes are the 350L Cognac barrel and the 87cm–90cm Burgundy style of 225L capacity.

The traditional Château style, or Bordelaise barrel, manufactured with willow hoops on each end, is made with a thin stave at Tonnellerie Ludonnaise in France. This Château style is also available with a standard galvanized hoop in place of the willow hoop.

Tonnellerie Ludonnaise manufactures upright or horizontal tanks and ovals of capacities to order. Wood for these products is air-dried five years, due to the thickness, and comes from the Center of France. These tanks and ovals are toasted by standard manufacturing processes. Stainless steel doors are available.

Visitors from the wine industry are welcome to visit the cooperage in Calistoga to familiarize themselves with the 'old traditional French method' of coopering. Please call for an appointment at (707) 942-9301 and ask for Duane Wall or Alain Poisson.

Inquiries to: Tonnellerie Française, P.O. Box 798/1401 Tubbs Lane, Calistoga, CA 94515, (707) 942-9301.

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Tonnellerie Seguin Moreau

Tonnellerie Seguin Moreau, a French cooperage, has opened an administrative office in Napa, CA, to receive inquiries and orders for French oak barrels. It has a direct overseas hookup with the cooperage in Cognac and can answer all questions immediately. Price quotations and delivery dates can be confirmed within 24 hours.

Select woods, air-dried for over three years, are offered. Oak from Limousin, Allier, Tronçais, Nevers, Bertranges, Vosges, Argonne, and Central France are available throughout the year. Both traditional and export shapes are imported. Styles include Bordeaux Château, Château Ferré, Bordeaux export, Barrique Limousin, Burgundy, and Champagne barrels, all 225L, 350L wine casks, and 500L puncheons. Large tanks and ovals are also available.

Toast levels (light, medium, medium-plus, or heavy) are determined for each customer's specific needs. Bung holes are burned. There is no prescribed formula for toast levels. It depends on wood type, grape, and what the winemaker wishes to express.

Alain Fouquet, Seguin Moreau's 20-year veteran master cooper, is in the U.S. several months during the year. Fouquet, a third-generation cooper, spends much of his time visiting wineries and performing on-site inspections of the wine barrels. He also tastes wines prior to barreling and discusses with the winemaker which qualities, such as vanilla, should be enhanced to improve the wine.

Inquiries to: Tonnellerie Seguin Moreau, U.S.A. Administrative Services Office, 2180 Jefferson Street, Ste. 208, Napa, CA 94559, (707) 252-3408.

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Tonnellerie Vicard

For over five generations, Tonnellerie Vicard, Cognac, France, has manufactured barrels, conical upright tanks, and vats (oval and round) according to traditional methods for the ageing of premium wines, brandies, and distillates.

Oak from the French forests is used exclusively: Limousin, Nevers, Allier, Tronçais, and Vosges. Each type of oak has its own qualities according to its origin, and affects wine and brandy ageing differently.

Because barrels made of sawn wood are not watertight, all wood is split. The stave-bending and toasting is done over an open oak fire. An oak fire preserves wood tannins and flavors which will later be absorbed by wine and brandy. Our range of cooperage includes:

*228L (60-gal) Bordeaux Châteaux barrels. These are mainly made of oak from Allier, Nevers, and Tronçais. These barrels are less thick than Bordeaux export, and consequently the contact between air and wine happens more rapidly. They are available with or without wooden hoops.

*228L Bordeaux or Bourgogne export barrels. These are stronger than Bordeaux Châteaux barrels. They are made of oak from Allier, Nevers, Limousin, and Vosges, and are available only with galvanized hoops.

*300–350L (78- to 90-gal) barrels, which are standard for brandy. All Cognac houses age their Cognac in these Limousin containers.

*450–500L (119- to 230-gal) barrels, which contribute less tannins to wines than other barrels, but are perfect for wines that require ageing.

Jean Vicard, general manager, continues to perpetuate our tradition of quality through research and innovation of barrel-making techniques. He has, for instance, designed a conical upright tank for wine that has the following specifications: The top of the tank is domed in order to allow thorough filling, and there is a stainless steel door on one side. This tank has the same advantages as a tank of equivalent capacity, but costs 40% less.

If you have any problems concerning the ageing of your varietal wines, please contact our export manager, Vincent Bouchard, in California. He is at your disposal to answer any questions you might have.

Inquiries to: Vincent Bouchard, 1525 Stockton Street, St. Helena, CA 94574, (707) 963-0541; or Tonnellerie Vicard, 184 Rue Haute de Cronin, 16102 Cognac, France, Tel. 45.82.02.58.

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Glen Ellen Creates Conditions for Sales

Ray & Eleanor Heald

When you talk about the wine business with Mike Benziger, general manager at his family's Glen Ellen Winery, Glen Ellen, CA, you begin to notice statements that give you a clue to the success of this operation.

There are his serendipitous statements such as, "A couple of times in your life, you get the deep feeling–a hunch–that you've found the place and the whole thing is going to work. Purchasing the ranch to start Glen Ellen Winery was a total, 100% emotional decision. I never checked a climate chart, water availability, or soil samples. I just said, 'This is the place–I know it.' "

Getting Started

Behind these words that sound like so much euphoria is the pragmatic, heads-up, business-sense of Mike Benziger, who states, "In today's market, we have to slug it out with the big guys–Gallo and Seagram's–and their marketing power. We have to do it differently."

There are not dual personalities here, but rather a sense of how the public likes to perceive wineries–friendly, small, magical, emotional, family-run–and the way to really sell wine, survive, and make a decent living in the marketing trenches of the industry.

To unfold the complete story of Glen Ellen, one must go back in time to Mike Benziger's college graduation year, 1973. He wanted no part of life in New York City where his father, Bruno, was a partner in the wine and spirits distributing firm, Park-Benziger Imports.

He headed for California and gained employment in Beltramo's, a Palo Alto, CA, wine shop. There, he increased his wine knowledge and love of wine. Later, he worked as assistant winemaker at Stony Ridge Winery, Pleasanton, CA, where he met Bruce Rector, now a Glen Ellen partner. It was at Stony Ridge, along with Rector, where he learned valuable blending techniques that would eventually put Glen Ellen in business.

Between 1977 and 1980, he looked hard for vineyard acreage. His enthusiasm had stimulated his father's interest to the extent of a promise of investment should the opportunity come along. Mike says, "After looking for three years, when I saw the Julius Wegener ranch, I knew I had found it. I phoned my father and reminded him that he had offered to invest in a business of mine–and I told him, 'It's now or never.' If this had been a year earlier or later, it would not have worked, but he was at a point in his life where he was tired of his business and looking for a new challenge."

According to Bruno, "We had two advantages from the beginning: 1) Very little debt load; we paid cash for the land and the buildings. We built the winery with family labor and a small mortgage; 2) I spent 35 years selling wine and spirits throughout the U.S. and had lots of friends in the industry."

These two advantages led to Glen Ellen's being able to purchase, in 1986, a new crush pad and a new bottling line, each at a cost of $250,000. For the 25,000-case production of white-label estate wines, a bin dumper and tray grape-sorting system, manned by seven people, is part of the new crush pad. In addition, 400 60-gal French oak barrels were purchased. The bottling line operates two shifts and has a capacity of 5,500 bottles/day.

Bruno states his sales motto: "Create conditions for sales." In accordance with this, Mike remembers, "Dad didn't want to wait to get the brand going. Before we had a chance to make our own wines, he wanted to sell the brand–Glen Ellen. Dad said, 'Get me some wine, blend it up, I want to start selling!' Between 1979 and 1983, there was an ocean of Chardonnay and Cabernet Sauvignon on the market."

Proprietor's Reserve Wines

Bruno adds, "The wine market was fairly depressed in early 1982, with lots of bulk wine floating around. This was the start of our Proprietor's Reserve (PR) wines."

According to Mike, the PR wines were his father's idea and reflect his father's personality–uncomplicated, up-front, nothing hidden, simple, straight-forward, and friendly. "With these wines," says Mike, "we don't want a review that says this wine has tremendous layers of complexity, requiring five years of bottle age before drinking. We want flavors and aromas that people can identify and we want them to say, 'This wine tastes great. I'd like to have some more.'

"We call our inexpensive wine 'Proprietor's Reserve' because we want to provide value: a quality wine at a good price. We want to sell a wine that everyone can afford to drink daily. These are the wines we drink on a regular basis, at home, with

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Glen Ellen estate and winery (l). Bruno and Mike Benziger stand in front of new grape-sorting system (r).

family. Our PR wines deliver immediate enjoyment; we want people to buy it, age it on the way home, and drink it."

Bruno adds, "We were going to use the PR wines only as a cash flow device to get a start in the market and then drop it in favor of our estate-bottled varietal wines. As it turned out, the tail wagged the dog. PR took off, and because of its success, people began buying our premium wines.

"We let the wholesaler, retailer, and consumer know the purpose of the PR wines by putting lots of literature in each case. PR wine back labels are family-oriented. We have 96 in the series. They include pictures of the family (*i.e.*, Helen and Bruno Benziger) and the house, plus historical sketches of the area and the ranch. We want consumers to have a feeling that there are real people behind each bottle of Glen Ellen wine."

Summer 1982 saw the first releases of Glen Ellen wines: PR Red (Cabernet Sauvignon), PR White Dinner Wine (75% Chardonnay), and Benziger family wines—Chardonnay and Sonoma County Sauvignon Blanc. Stoneman and Heath were hired as San Francisco brokers and Bruno went back to New York to arrange for his brother to sell Glen Ellen wines through his wholesale house.

Bruno recalls, "In 1982, there were few premium California wines available in NY. The east is an import market. After getting about 40 retail accounts, I went to find a distributor to sell Glen Ellen wines in NY. Then I went to Connecticut to get another distributor. All were small distributors, people we knew through Park-Benziger.

According to Bruno, when Glen Ellen's California distributor, Classic Wines, suggested white Zinfandel production, "the boys said 'No; that's like making cooler.' My reply was that if DeLoach, Kenwood, and Beringer can do it, we can, too. Everybody who was buying our other wines just tacked on an

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additional order for the white Zinfandel. It also opened a lot of new accounts for us that previously were not interested in our wines."

In 1983, PR wines were changed to include varietally-labeled Cabernet Sauvignon and Chardonnay that continued to sell for $5 retail (CA), and the brand began to take off. PR Red and White production continued, but the white began to be finished with some residual sugar and the red became a blend of Petite Sirah, Zinfandel, and Cabernet Sauvignon, both bottled in 750mL.

Addition of Magnums to Product Line

Bruno continues, "I visited with the Safeway wine manager, who suggested we bottle our PR Red and White wines in magnums. I responded, 'We can't do that. We are a small boutique winery. Magnums would take away the small-winery impression we want to leave with the consumer.' He replied, 'It didn't hurt Robert Mondavi. Mondavi is selling over one million cases and is able to present a small-winery image. If it helps you to make a decision, here is an order for three truckloads of Glen Ellen Red and White Dinner Wine bottled in magnums.' "When I brought the idea back to the family, nobody wanted to bottle in magnums—it would tarnish our image. Finally I said, 'Tarnish our image or not, I think it's a good idea. Let's try it.' " The three-truckload order paid for the new equipment needed to bottle in magnums and the package took off."

In 1986, all the grapes for the PR line were purchased. "We buy the best grapes available and keep our taste and style consistent," Bruno explains.

Estate Wine Styles Determined in Vineyard

According to Mike, "Benziger Family estate-bottled wines (white label) are made and stylized in the vineyard. The viticulturist is the winemaker! Our style is determined and controlled in the vineyard with farming techniques—watering, fertilizing, canopy control, time of harvest, vineyard selection, clonal selection—there are lots of ways to control flavor. Every grape is sorted by hand at our vibrating sorting trays to further control quality."

The Glen Ellen 'Home' ranch property has 80 acres of steep terraces with Sauvignon Blanc and Cabernet Sauvignon, along with Merlot and Cabernet Franc used for blending with the Cabernet Sauvignon. Additional grapes are purchased from 70 acres of small 'flavor patches' in Sonoma Valley. Mike works closely with the growers, stating, "They have to have the same goal as Glen Ellen—we are all responsible for selling the wine on the retailer's shelf. The growers are part of the family; most of them started when we did. We regularly invite them to the winery to learn what we are doing to sell the wine from their grapes."

Joe Benziger, cellar master, works with assistant winemakers Brian Wilson, formerly of Souverain, and Bob Goyer, formerly of La Crema Vinera and Chalk Hill wineries, making the estate wines of Glen Ellen. Rector is the grape buyer and winemaker for the PR wines and sources bulk wine for sale.

Pricing Policies Aid Sales

According to Bruno, "We start our marketing program from the store shelf. We know how to sell wine; that's my background. We sell our wines by going into a market and setting a price point and then working backward to the wholesale price—the price we have to charge. We try to get our wine at a price where it will move. We want a retail price of $4.99 in California. If we get $3.99, that's not too bad, but $2.99 is bad news. Selling in multiple is OK, because it disguises the price. At two for $7, people don't calculate the price per bottle.

"Getting the first order for our wine is fairly easy; it's the second order we are looking for. If we don't hear from a client for a while, we call and ask how everything is going. We ask if the price point was right. We may suggest a bonus to the salespeople, or do something to get the product moving. We constantly monitor, to make sure the wine is being pulled through the system. If someone gets stuck with inventory, we buy it back and place it where it will sell.

"Create a condition" is a favorite phrase of mine. You know the Italian line about a deal you can't refuse; well, this is mine. You can let your people lay the groundwork for a sale, but when it comes down to the handshake, the boss comes in to seal it. It doesn't always mean that the boss can make a better price or iron out details—it's just that you're there to do it. The buyer is happy that you thought enough to make a special trip. This personal touch is particularly important to keep goods moving, not just to get them started. It is just as important to give a personal touch when you are successful as when you are just starting out."

To the question, "What does it take to sell wine?" came Bruno's reply, "It takes a commitment from the distributor, but the retailer must have a consistently good product with a dependable supply. He must be able to make a buck. We are willing to take a smaller markup at Glen Ellen to get the ball rolling."

Distribution

Glen Ellen wines are sold in all 50 states, plus Japan and several European countries. Ten to twelve states were opened up just because a person would visit the winery, buy a bottle or two for $3.99 - $4.99, go back home, tell his local retailer about the discovery, and the retailer would talk to a wholesaler. Glen Ellen wines are on several airlines, in duty-free shops for travelers to the Orient and Europe, and cruise ship lines.

An incentive program is used to encourage distributors to sell more Glen Ellen wines. The prize might be a bicycle or a trip to the winery with an overnight stay in San Francisco. A salesperson might be awarded $10 for opening each new account and then an additional $2/case sold to this new account.

According to Bruno, "We get calls every day from big distributors who say we've got 55 men on the street, we have computers, etc., and we can do a better job for you than your present distributor, who is only a fraction of our size. I tell them,

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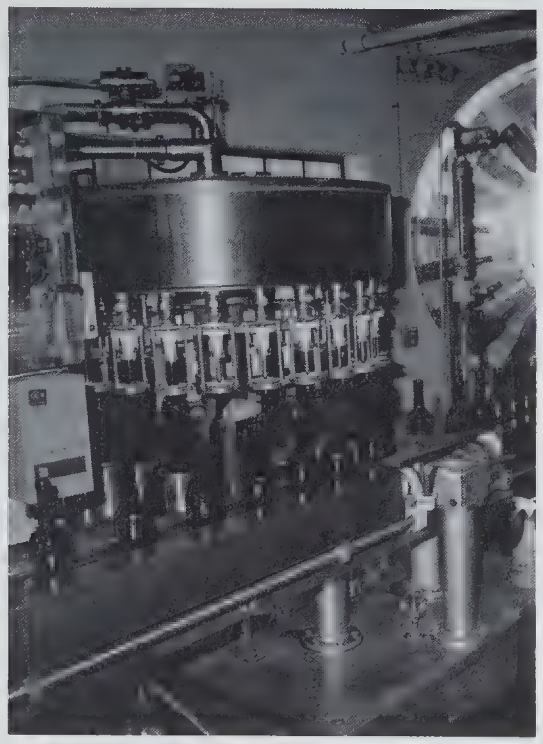
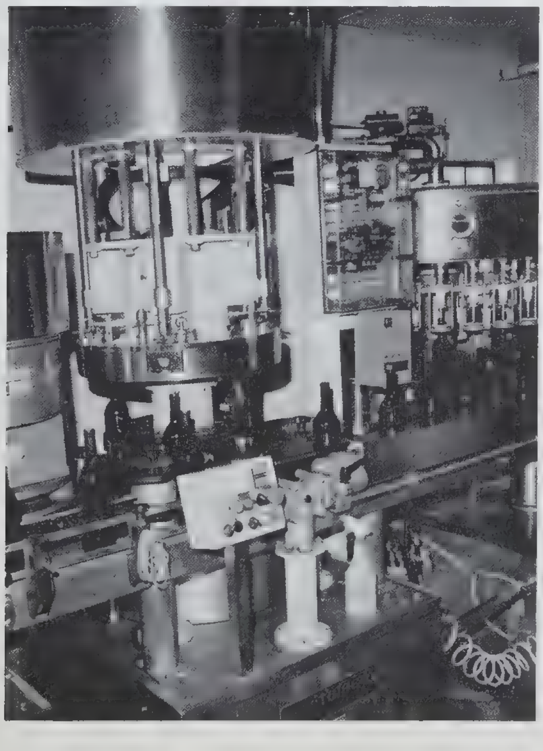
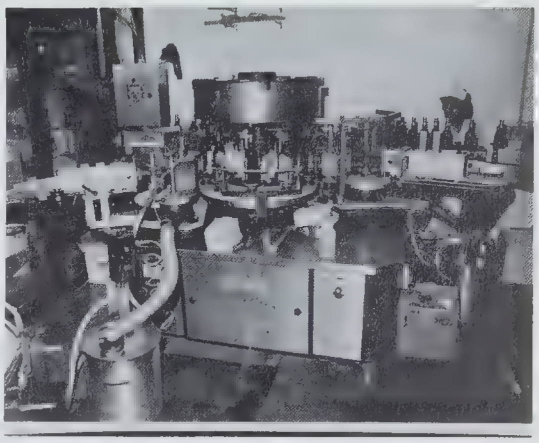


Glen Ellen Winery's 100 bottle/minute bottling line includes three pieces of equipment supplied by fp Packaging, Inc. The Cobert Olimpia#25 low-vacuum gravity filler has the latest filling valve designed to gently fill without turbulence or foaming. Inside the filler bowl is Cobert's new nitrogen blanketing system, which can be removed for sterilization. Under normal conditions, oxygen pickup is extremely low (0.5 ppm or less). The filler valves can be dismantled without tools. A unique centralized fill height adjustment system allows the operator to change the fill height of all valves simultaneously by adjusting one control device.

The Bertolaso Delta#404R Corker is electromechanically linked with the filler by a long infeed screw which provides complete control by one operator. Each corking head has 4-piece stainless steel compressing jaws which can be be removed from the front of the machine for quick cleaning and maintenance. An air jet cleans the end of each cork and a vacuum system pulls a vacuum on the bottle head space.

The Cavagnino and Gatti CG84/B210 rotary labeler with all-stainless-steel construction features a patented cam-activated label transfer system that can apply face, neck, and back labels. Other important features include labeling table and label stations completely enclosed in oil baths, automatic speed control, pneumatic glue pumps, automatic controlled glue film distribution, and quick changeover features.





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'I've never changed a distributor unless he has failed to pay. Right now, his sales of our wine are increasing and we are happy. Besides, when I was starting out, you wouldn't have anything to do with me; our current representative took the chance and now he deserves the reward.'

"We pack copies of press coverage in each case of wine as point-of-sale material. We take the article that includes Glen Ellen and highlight the portion of the piece that compliments our wines. Ninety percent of the materials may be thrown away, but perhaps a wine salesperson or a clerk will read about our wine and recommend it to a customer because of our effort. This is our only advertisement. We rarely place an ad in a magazine."

Commenting on restaurant sales, Bruno states, "We participate in restaurant tastings that are involved in pairing food with wine. Wine by the glass is the hottest way to sell wine in restaurants today. We can sell five times as much wine in a restaurant with a wine-by-the-glass program. We try to suggest a price/glass for restaurants and even provide a written explanation of the profit they will make, but if we think they are overcharging, it's pretty hard to say anything about their pricing policy."

M.G. Vallejo Label

The Benziger family is not just sitting on Glen Ellen's success. They are involved in restoring the Vallejo winery in Sonoma. According to Bruno, "General Vallejo started the first winery in California, was the first governor, and raised the Bear Flag in Sonoma—he's a Paul Revere-type in the west.

"We made 25 cases of wine under the M.G. Vallejo label to raise money for the restoration of Vallejo's home. The wine became so popular and so much in demand, I released it as a new brand in May, 1986. Now distribution of this brand is being done through all-new distributors throughout the U.S. Just as we do not want to be in the same house as Round Hill or Corbett Canyon, we don't want M.G. Vallejo competing with Glen Ellen. I own the label with a partner and Glen Ellen provides the wine. We have a Cabernet Sauvignon and a Chardonnay."

Family-Run Winery Image

Everybody in the Benziger family works in sales. Generic business cards are used—no names, no titles. This includes Bruno, family head and executive sales manager; his wife Helen, in charge of winery public relations; Mike, general manager and in charge of farming; his wife Mary, taking care of shipping and tracking sales; Joe, winery manager; Diane, accounts receivable; Bob, national sales manager; Cathy, sales coordinator; Jerry, east coast sales manager; Patsy and her husband, Tim Wallace, public relations; and Chris, marketing. Kathy, the youngest family member, is still in school pursuing a computer career.

Marketing ideas come from 'partners' meetings' that are held every week at the winery. As Bruno puts it, "We don't have to run everything by a board of directors."

A family-run winery image is important to future success of Glen Ellen's wines. As Bruno states, "We want to keep a boutique image. We will not publish sales figures. When people visit us, they can see our operation, and their tour guide will probably be a family member."

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Wine Analysis and Microbiology

fee schedule

April 1987

Acidity

organic acid profile	HPLC	
tartaric, malic citric,		
lactic, acetic, succinic		$ 40
titratable acidity	AOAC	6
volatile acidity	AOAC	
corrected for SO_2		10
pH		6
malic acid (quantitative)	enzymatic	14
malic acid (qualitative)	TLC	7
lactic acid	enzymatic	18
citric acid	enzymatic	18
fumaric acid	HPLC	55
tartaric acid metavanadate	(Pilone)	12
amino acid analysis	HPLC	
"physiological fluid"		200
amino acid analysis	HPLC	
acidic, neutral, basic as groups + arginine		45
arginine	HPLC	35

Alcohols

ethanol		
gas chromatography	AOAC	$ 15
distillation-pycnometer	AOAC	60
methanol	GLC	60
higher alcohols & fusel oils		
gas chromatography		100
glycerol	HPLC	40

Cations

atomic absorption / emission		
copper, iron, potassium	/element	$ 10
calcium, sodium, magnesium,	/element	14
other elements		inquire

Chemical Additions

sulfur dioxide, "free"	Ripper	$ 6
sulfur dioxide, "total"	Ripper	7
sulfur dioxide, "free"		
vacuum aspiration		10
sulfur dioxide, "total"		
vacuum aspiration		18
sorbic acid (distillation)	AOAC	16
sorbic acid	HPLC	35
benzoic acid	HPLC	35
ascorbic acid	HPLC	75
salicylic acid	HPLC	75

Phenolic Compounds

total phenols	F&C	$ 12
nonflavonoid phenols	F&C	18
phenolics analysis	HPLC	inquire
malvidin diglucoside		
qualitative	OIV	20
quantitative	OIV	50
anthocyanins	HPLC	90

Soluble Solids

glucose + fructose	enzymatic	$ 14
reducing sugar g/100ml	AOAC	16
g/100g	AOAC	26
inverted sample	AOAC	25
brix		6
specific gravity	pycnometer	30
total dry extract	AOAC	25

Stability

KHT CP (cold stability)		
K^+, H_2T, pH, EtOH		$ 42
CaT CP (calcium stability)		
Ca^{2+}, H_2T, pH, EtOH		44
KHT & CaT CP's		55
heat stability		
filtration & incubation	Rankine	6
heat stability trials		
bentonite fining series		37
sediment / haze identification		from $ 20

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ethyl acetate	GLC	40
histamine	HPLC	95
glycols		
ethylene glycol	GLC	85
diethylene glycol	GC/MS	80
propylene glycol	GLC	85
ash & alkalinity of ash	AOAC	100
dissolved carbon dioxide	AOAC	25
dissolved oxygen		8
ferrocyanide (Hubach) ATF		15
sodium azide (HPLC)		150
urethane (ethyl carbamate)	GC/MS	inquire

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fee schedule

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Regulatory Analysis

Japanese export analysis	
requirements vary	inquire
E.E.C. Form V.I.1., Box 11	
short form (registered wineries)	$ 45
long form	95
Commonwealth of Virginia "ABC"	
"certificate of analysis"	60
Other state & export certificates	
requirements vary	inquire
Nutritional statement analysis	
calories, carbohydrates, protein, fat	150

Sensory Evaluation

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membrane filtration cultures (2) for yeast and bacteria (colony count)	$ 13
membrane filtration culture (1) for yeast or bacteria (colony count)	10
characterization of growth from positive bottled sterility cultures	13

Direct Cultures

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Saccharomyces & Brettanomyces	$ 14
Zygosaccharomyces	16
wine bacteria culture	
malolactic & spoilage	14

Cork Sterility

Rankine & Pilone	$ 35

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-API assimilation panel (yeast)	$ 50
-API utilization panel (bacteria)	inquire
-fatty acid profile and data base match (GLC)	inquire

Microscopic Examinations

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wet mount (centrifuged sediment)	15
gram stain	25
cell count, bacteria	
-viable (serial dilution)	35
-total (hemocytometer)	20
cell count, yeast	
-viable (serial dilution)	35
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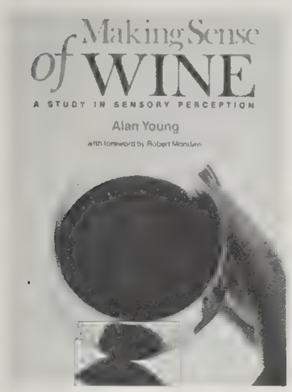

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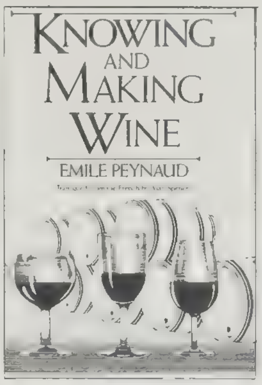

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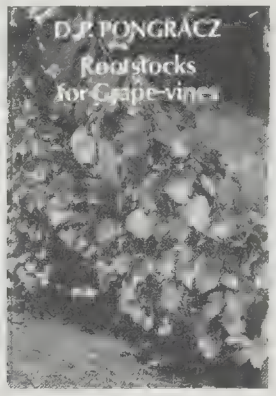

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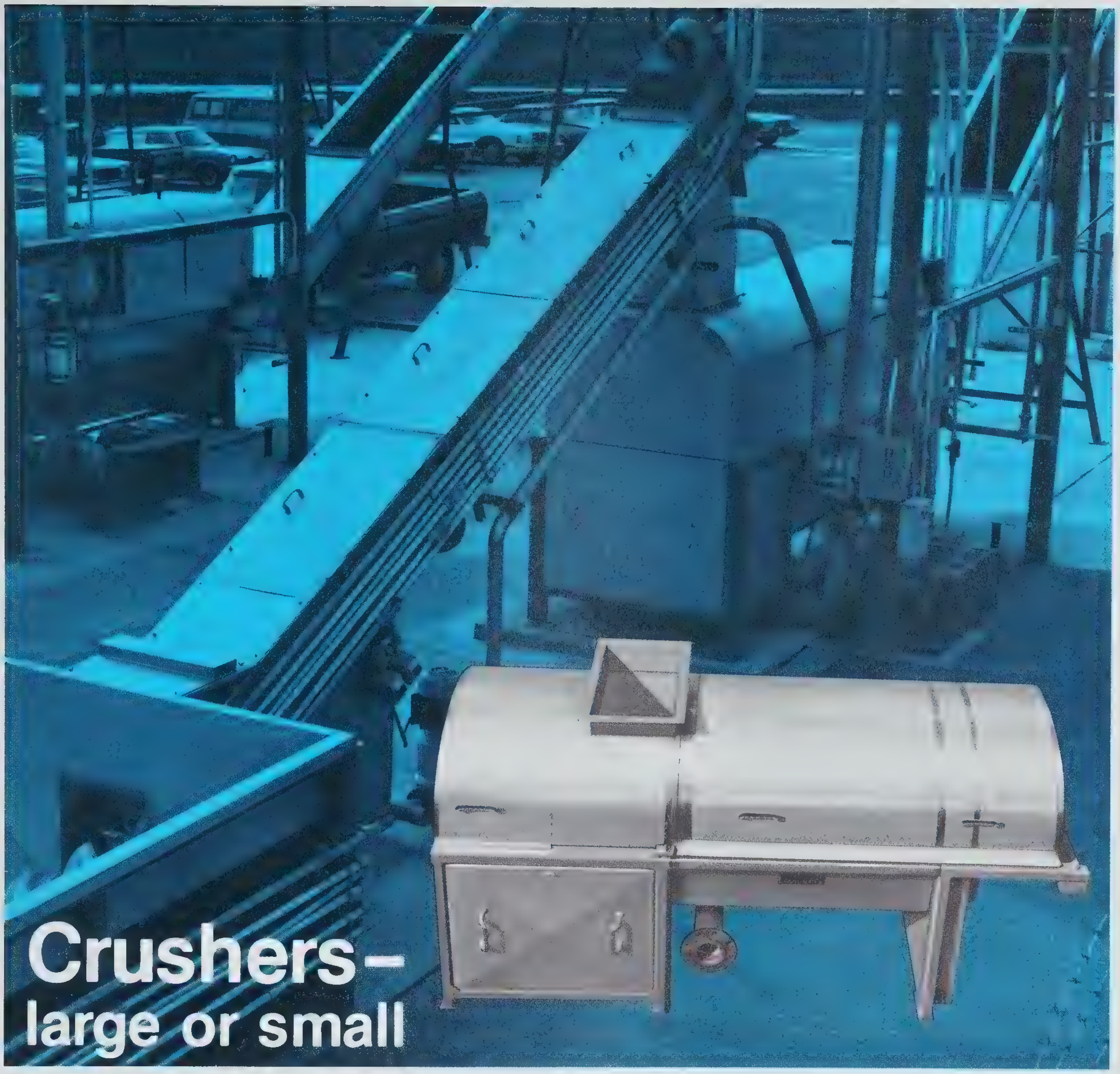

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Protein Fining Agents, Part I

Bruce Zoecklein, Enologist
Virginia Polytechnic Institute & State University

Winemakers throughout the world employ protein fining agents for the purposes of modifying clarity, lees compaction, stability, color, body, astringency, bitterness, finish, and aroma. These agents include gelatin, casein, isinglass, egg albumen, and 'protein-like' compounds such as polyvinylpyrrolidone (PVPP).

PW conducted a survey of U.S. wineries covering what, when, and how protein fining agents are used. This begins a series exploring the utilization of these production tools in juice and winemaking.

Protein fining agents are positively charged and react principally with entities of the opposite charge such as phenols. Phenols furnish red wine with color, astringency, and bitterness; serve as sources of browning substrates; provide odorous compounds; and act as oxygen reservoirs. Thus, removing phenols by the use of protein fining agents can have a dramatic effect on juice and wine.

Clarity and Filterability

Clarity and filterability are reasons for the utilization of fining agents. Of the 113 winemakers who applied protein fining agents for clarity modification, 46 used gelatin, 21 isinglass, and 33 egg whites.

In juice and wine, the particles in suspension have a number of properties that affect the way in which they are retained by a filter. The smaller the particle, the more difficult it is to remove from solution. Two important characteristics of suspended particles are their size distribution and electrostatic charge.

Several points are apparent from fig. 1. Although the range of particle size is large, a substantial number of particles are well below one micrometer in size. Additionally, the particle size distribution is nonsymmetrical. It is clustered rather closely to the smallest particles in the distribution, with the population of larger particles being small. The position of the curve may shift to the right or left with various juices or wines; however, a large proportion of natural suspended materials conform to this skewed type of distribution.

If the charge of the fining agent is the opposite of the particles in suspension, then neutralization and adsorption can occur. In a fining operation, small particles of suspended solids are induced to bind together, forming larger particles, thus shifting the above curve to the right. Because of their density relative to that of the wine or juice, these larger particles may then precipitate from solution.

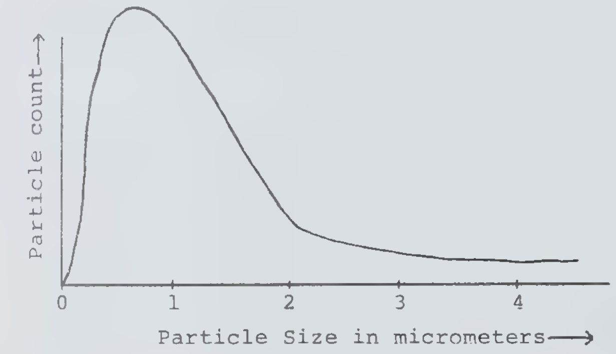

Fig. 1—Particle size versus relative frequency for a typical distribution of particles in suspension.

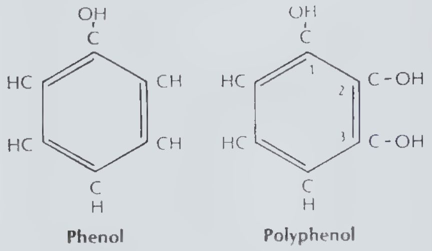

Fig. 2

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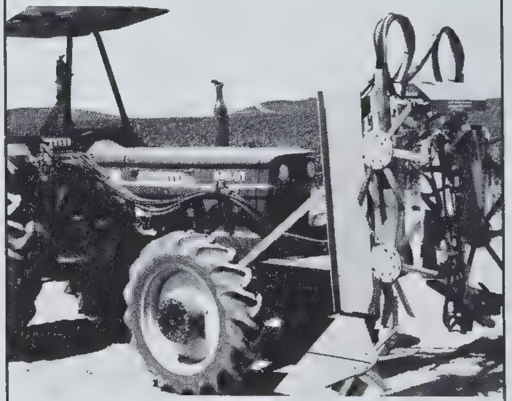

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Table I—Comparison of Fining Agents[1]

Color Removal	Tannin Removal	Quantity of Lees	Tendency to Overfine	Clarity and Stability	Quality Impairment
carbon	gelatin	bentonite[2]	gelatin	bentonite	carbon
gelatin	albumen	gelatin	albumen	ferrocyanide	bentonite
casein	isinglass	casein	isinglass	cufex	casein
albumen	casein	albumen	casein	carbon	gelatin
isinglass	bentonite	isinglass	ferrocyanide	isinglass	albumen
bentonite	carbon	ferrocyanide	cufex	casein	isinglass
ferrocyanide	ferrocyanide	cufex		gelatin	ferrocyanide
cufex	cufex	carbon		albumen	cufex

[1] *Most to least effect* [2] *Usually twice the lees of other agents*

In most cases, the fining agent absorbs suspended material and exerts some clarifying action by virtue of formation of particles of higher density, thus increasing clarity and filterability. This can be a major advantage to the vintner. It is difficult at best to remove small colloidal particles by filtration. Fining agents can be an aid to the vintner by reducing filtration, saving labor and possibly improving wine palatability.

Table I shows the relative effects which various fining agents have on some important wine and juice parameters. This listing is dependent upon the age, the temperature of the wine, how the agent is prepared and dispensed, metal content, etc. For example, small soluble anthocyanins are incorporated into larger molecules as wine ages. If a young wine is fined with a protein fining agent such as gelatin, there will be a much less dramatic effect on the color than if the fining occurred following ageing. The opposite phenomenon is observed when fining with bentonite.

An understanding of the relative effects which each agent has on various wine and juice parameters is essential in selecting the proper agents to utilize in laboratory trials.

To be able to duplicate laboratory trials in the cellar, the same lot of fining agent must be prepared and used in the same manner. Four common methods of fining agent additions include:

a) adding uniformly and slowly through a 'Y' on the suction side of a positive displacement pump while transferring or mixing;

b) adding uniformly and slowly through an 'in-line' proportioning-type pump;

c) adding uniformly and slowly through a 'T' into a Guth-type tank mixer;

d) adding slowly in slurry form to a barrel using a barrel mixer or a dowel stirred in a figure-8 motion through the bung hole.

Fining addition methods will be explored in subsequent installments.

Gelatin

The most commonly-used protein fining agent, according to the *PW* survey, is gelatin. Gelatin is prepared from collagen, the major structural protein in skin and bones, by heating in the presence of acids or bases. The hydrolysis which results from such heating affects the molecular size and gelling capacity. Gelatin is composed of long polypeptide chains in which glycine and proline are the most common amino acids.

Gelatin has an isoelectric point of pH 4.7, well above the normal pH of grape juice or wine. Therefore, it occurs in solution as a positively-charged entity capable of reaction with negatively-charged species such as phenol via hydrogen bond formation. (For a discussion on protein isoelectric points and their significance, see *PW* May/June 1984.) Gelatin finds its principal application in clarification of juice and wines as well as in modification of overly-astringent wines.

Commercial gelatin is available in several forms and grades. It is usually rated according to purity as well as 'bloom' number. The bloom number is determined by allowing a 6.66% gelatin solution to age at 10°C for exactly 18 hours. The number of grams needed to force a 0.5-inch diameter stamp 4 mm into the gel gives the bloom number (Hahn and Possman 1977).

The bloom number of the gelatin molecule relates to gelatin's ability to absorb large quantities of water, usually on the order of 6 - 10 times its weight. Generally, the greater the bloom, the greater the binding capacity of the gelatin. A proper fining gelatin for wine ranges from 80–150 bloom and averages 15,000 to 140,000 molecular weight (Recht 1984). Size of the gelatin molecule (number of available binding sites) can have a profound effect on phenol removal. Fining with a gelatin of reduced molecular size is reported to reduce the rate of precipitation but allows for better clarification and compaction (Bergeret 1963).

Fig. 2 shows the structure of wine phenols. The important linkage between phenols and proteins such as gelatin is hydrogen bonding between the phenolic hydroxyls of the phenol (–OH) and the amide bonds of the proteins ($(\mathrm{R}-\mathrm{C}\genfrac{}{}{0pt}{}{=\mathrm{O}}{-\mathrm{NH_2}})$). These bonds are relatively weak compared to carbon-carbon covalent bonds.

The strength of the hydrogen bond formed is greater the lower the pH of the media and the more negative the attracting group. Larger molecular weight phenols have a greater number of binding sites available and are therefore preferentially removed by large molecules such as gelatin.

In terms of phenol adsorption capacity, gelatin is usually similar to albumen (see Table I). This generalization is somewhat dependent upon how the gelatin is prepared. (This will be reviewed in the next *PW* installment). Gelatin preferentially binds with larger molecules; thus, the fining agent has a more dramatic effect on color and tannin reduction in older than in younger wines. Older wines have a greater percentage of large polymeric phenols.

Another important aspect of fining selectivity is the solubility and flexibility of the fining agent. The fining agent must have the flexibility to align itself with the phenolic hydroxyls of the phenols to form a 'good fit'.

Gelatin is occasionally employed to help remove the harshness and perhaps color of press juice prior to fermentation. Gelatin can strip wine character as well as remain suspended in solution. Like egg albumen, gelatin is often added to soften wine astringency; however, unlike albumen, it may remove too much fruit character from a wine.

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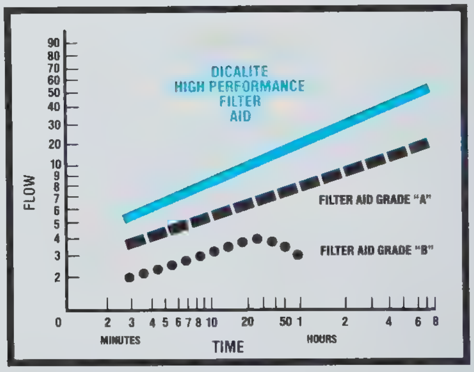

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Temperature Summation: Time for a Revision?

John T. O. Kirk
Commonwealth Scientific & Industrial Research Organization,
Division of Plant Industry, Canberra, Australia

Use of the summation of temperature over time as an index of suitability of climate for agricultural production is a technique which is just about as old as the thermometer itself. Five years after inventing the alcohol thermometer in 1730, Reaumur proposed a relationship between growing season temperatures and date of grape and wheat harvests (11). Different countries and different years could be compared in terms of the 'sum of the degrees of heat' (the sum of the daily mean temperature) for the April-May-June period.

Temperature and the Grapevine

Subsequently, it was recognized that plant activities cease below a certain temperature, and that it is the accumulated temperatures during the period in which average temperature is above this threshold which are important. Alphonse de Candolle, 19th-century botanist, applied these concepts to various crops. For the grapevine, he concluded that the minimum temperature for vegetative growth is about 10°C (50°F). Successful cultivation of a vine for wine production requires a temperature summation of at least 2900 day-degrees °C for the period within which average daily temperature does not fall below 10°C (4).

Despite the assumption of 10°C as the lower limit of vine growth, de Candolle's temperature summation was calculated for a baseline of 0°C. Amerine and Winkler (1) in California introduced the modification of calculating the temperature summation over a baseline of 50°F/10°C, which has the useful effect of accentuating the numerical differences between years or places.

In addition, to simplify the comparison of one location with another, they standardized on temperature summation for the period April–October inclusive (October–April in the southern hemisphere). De Candolle's minimum temperature summation requirement of 2900 day-degrees °C above a 0°C baseline is approximately equivalent to a temperature summation of 1600–1800 day-degrees °F, or 900–1000 day-degrees °C above a baseline of 50°F/10°C on the Californian system (11).

An alternative basis to determine the suitability of a particular location for winegrape growing, simpler than temperature summation, is the mean temperature of the warmest month. Prescott (11) showed that a series of European stations at the northern limit of cultivation of the vine, over the longitude range 2°W to 16°E all had mean temperatures of the warmest month close to 66°F (average 65.6°F/18.7°C). It seems that a mean temperature of at least 18.7°C/65.6°F in the warmest month is necessary for successful cultivation of the vine.

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Prescott demonstrated that temperature summation over 10°C increases approximately linearly with the mean temperature of the warmest month. However, although this linear relationship holds quite well within certain geographical regions, *e.g.*, within France, within Europe, or within California, the relationship within one region may differ significantly from the relationship in another.

For example, the growing season day-degrees associated with any given temperature of the warmest month are consistently higher in California than in Europe (12), and in Australia than in France (13), this being a consequence of the greater seasonal temperature range in the more continental European climate. In recent years, the use of temperature of the warmest month rather than temperature summation for viticultural climatic assessment has been advocated by Smart and Dry in Australia (7, 13).

Among those areas with temperature summations or temperature of the warmest month above the specified minimum, there is of course a wide range of annual temperature regimes. It has long been recognized that this has profound implications, for dates of harvest, for quality of fruit and the resultant wine, and for which grape varieties can be grown in a particular site successfully.

Climatic Classification

Assignment of a number, be it a temperature summation or temperature of warmest month, to each viticultural region corresponding in some measure to its thermal characteristics, raises the possibility of a regional classification from the coldest to the hottest. We merely have to decide how many categories we wish to distinguish, and their numerical boundaries. The possibility also arises of categorizing grape varieties in terms of the number of day-degrees, or mean temperature of the warmest month, to which they are best suited.

In 1885, Angot published climatic data for French viticultural regions from the Alps to the Mediterranean and identified seven groups ranging in temperature summation (above 9°C) from 973 to 1957 day-degrees °C (12). De Gasparin in France in 1860 classified vine varieties into seven groups according to the amount of heat (temperature summation) necessary for maturation, but Angot subsequently reduced this classification to two groups.

The best-known and most frequently-used temperature-based classification, however, was developed by Amerine and Winkler, and published in 1944 (1). It was originally devised to facilitate evaluation of the very wide range of climatic conditions in which grapes are grown in California, but has been applied to other parts of the world as well.

Five climatic regions were based on the April–October temperature summation (day-degrees above 50°F), and separated by increments of 500 day-degrees °F. The categories are I, less than 2500 day-degrees; II, 2501–3000 day-degrees; III, 3001–3500 day-degrees; IV, 3501–4000 day-degrees; V, greater than 4001 day-degrees.

To people interested in the relationship between viticulture and climate, the Amerine and Winkler system has proved useful, even illuminating, over the last 40 years. Nevertheless it would benefit from a certain modest revision. A suggestion as to the form this revision might take follows.

There are two reasons why revision is necessary. First is that the original system was based on degrees Fahrenheit. This was always out of line with accepted scientific units, and in the in-

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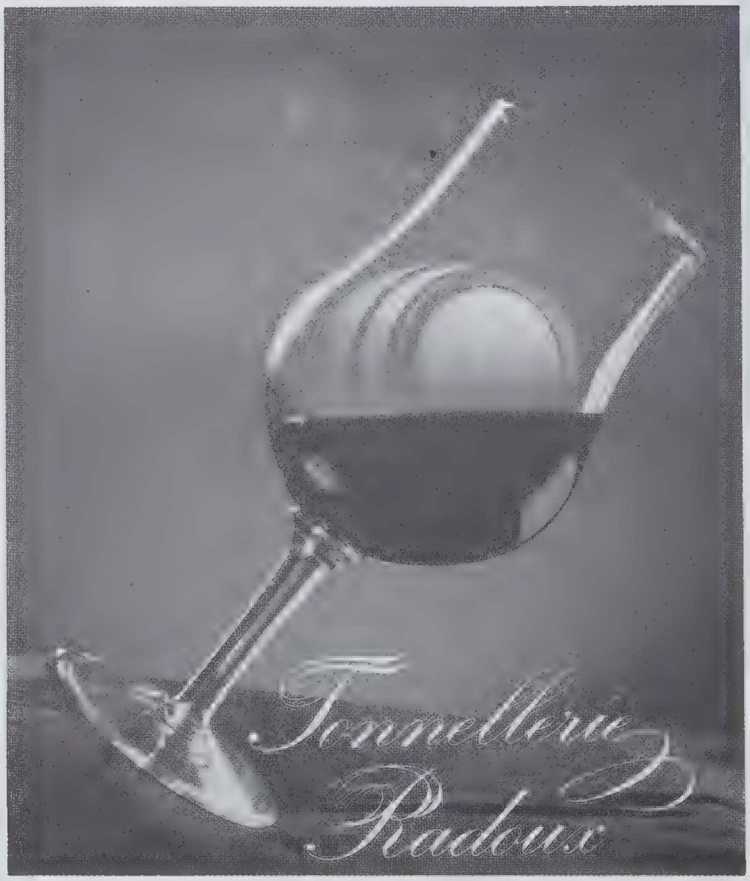

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tervening years has become increasingly out of line with everyday units in the English-speaking world, as conversion to the metric system has proceeded.

Cool-Climate Viticulture

The second reason is the recent increased interest in cool-climate wine production. Dry and Smart argue that when the Amerine and Winkler system was devised, 'cool climate' viticulture was under-represented in California. As a consequence, the California regional system is biased towards the hot end of the total temperature range over which wine grapes are likely to be grown (7).

They consider that the Australian winemaking districts encompassed by Californian category I cover too wide a range of climates. In addition, there has been a proliferation in recent years of vineyards in southern England, in places where the temperature summation is only about 1350 day-degrees °F. To incorporate even well-established viticultural regions in Germany with about 1700 day-degrees °F, climatic category I has to have a range of 800 day-degrees °F. If it is also to incorporate the English vineyards, this must be extended to more than 1100 day-degrees °F.

Thus, the Californian system does not adequately define the cooler end of the viticultural climate range. One solution to this problem is simply to extend the system downwards. Before doing so, however, consider the alternative approach proposed by Smart and Dry.

They proposed that climatic classification of viticultural regions should be based on no less than five different parameters: mean temperature of warmest month, continentality (difference between mean temperatures of warmest and coldest months), sunshine hours during growing season, aridity (the difference between rainfall and half the pan evaporation in the growing season), and humidity (average 9:00 a.m. value in warmest month) (13).

Subsequently, however, for separation of grapegrowing areas into broad climatic categories, they have used the mean temperature of the warmest month (6,7). Like Amerine and Winkler, they recognize five categories, but indicate them by temperature-related adjectives rather than numerals. These are defined as follows: Very Hot, mean temperature of warmest month greater than 23°C; Hot, 21.0°–22.9°C; Warm, 19.0°–20.9°C; Cool, 17.0°–18.9°C; Cold, less than 16.9°C.

Since Dry and Smart consider that the Californian climatic region I corresponds to a mean temperature of the warmest month of less than 19.5°C, it follows that region I corresponds to 2¼ of their climatic categories. Therefore, their system certainly provides increased definition of the cooler end of the viticultural climatic range.

Nevertheless, in other respects it is less satisfactory than a temperature summation system. In particular, it overestimates the amount of heat available for vine growth in continental climates (large annual temperature range), and underestimates it in maritime climates (small temperature range). On the Smart and Dry system, certain European districts commonly considered to be typical cool-climate viticultural regions would have to be classified as Warm: mean July temperature exceeds 19.0°C in, for example, Strasbourg (Alsace) and Beaune (8, 10).

In fairness, it must be pointed out that Smart and Dry do advocate that the annual temperature range as well as the temperature of the warmest month be taken into account in assessing the temperature aspects of climate for viticulture. But the

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fact remains that any simple one-dimensional climatic classification can only use one parameter, and the one they actually propose is the mean temperature of the warmest month.

A Revised Classification

Temperature summation more realistically represents heat availability for grape production than the mean temperature of the warmest month. How can we modify the Amerine and Winkler system so that it is both conveniently metric, and better defines the cooler end of the viticultural climatic range? A temperature summation increment of 500 day-degrees Fahrenheit corresponds to an increment of 278 day-degrees °C. I suggest a temperature summation increment of 300 day-degrees °C as a rounded metric near-equivalent of the Amerine and Winkler increment.

Summation should be carried out for the nominal 7-month growing season (April–October, or October–April, as appropriate). Following Smart and Dry, it is useful to indicate the different climatic categories by adjectives, ranging from 'Cold' to 'Very Hot', rather than by numerals. However, to do justice to the range of climates concerned, we need six rather than five classes. I therefore propose a new category of 'Mild' climate coming between 'Cool' and 'Warm', and I have chosen 901 day-degrees °C as the lower limit of the Cool climate category.

The new system would be: Cold, less than 900 day-degrees °C; Cool, 901–1200 day-degrees; Mild, 1201–1500 day-degrees; Warm, 1501–1800 day-degrees; Hot, 1801–2100 day-degrees; Very Hot, greater than 2101 day-degrees. It should be noted that these climatic categories cannot be equated exactly with those of Smart and Dry having the same name. Distribution of various viticultural regions throughout the world within this classification system is shown in Table 1.

Table 1. *Classification of world viticultural regions. As discussed in the text, this is carried out on the basis of growing season temperature summation, calculated as the sum of day-degrees °C above a 10°C baseline for April to October (N. Hemisphere), or October to April (S. hemisphere) inclusive, using climatic data from various sources.*

Country	Region	Day-Degrees
Climatic category–Cold (day-degrees °C ≤ 900)		
Ireland	Co. Cork	554
England	Sussex	766
Czechoslovakia	Prague	867
England	Southampton	893
Climatic category–Cool (day-degrees °C 901 - 1200)		
Australia	Tasmania	918 - 1155
Germany	Mosel	944
New Zealand	South Island	953
Germany	Rheingau	994
France	Champagne	1013
France	Alsace	1029
Germany	Baden	1030
France	Chablis	1099
USA	Willamette Valley, OR	1128
Switzerland	Geneva	1133
USA	Santa Cruz, CA	1161
Austria	Vienna	1164
France	Côte d'Or, Burgundy	1167
Climatic category–Mild (day-degrees °C 1201 - 1500)		
France	Bordeaux	1326
USA	Finger Lakes, NY	1333
USA	Yakima Valley, WA	1347
New Zealand	Hawkes Bay, N. Island	1392
Australia	Coonawara, S.A.	1414

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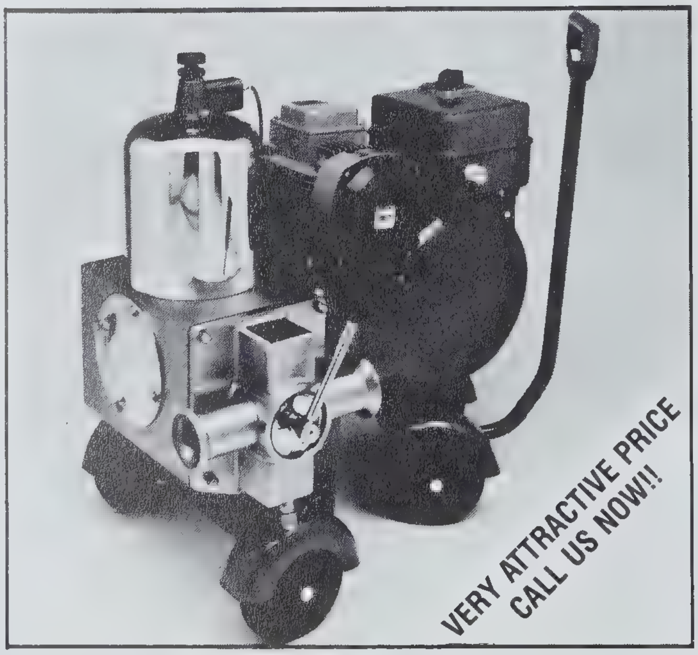

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Spain	Castile	1430
USA	Gilroy, CA	1461
France	Upper Rhone	1498
Chile	Santiago	1499

Climatic category—Warm (day-degrees °C 1501 - 1800)

Portugal	Oporto	1548
New Zealand	Auckland, N. Island	1555
Yugoslavia	Croatia	1564
Spain	Alto Ebro (Rioja)	1592
USA	Monterey, CA	1600
Italy	Alto Adige	1623
Italy	Asti, Piemonte	1628
Australia	Barossa Valley, S.A.	1673
Australia	Margaret River, W.A.	1680
USA	St. Helena, CA	1761
USA	Healdsburg, CA	1772
Australia	Rutherglen, N.E. Vic.	1782

Climatic category—Hot (day-degrees °C 1801 - 2100)

Italy	Veneto	1828
France	Châteauneuf-du-Pape, Lower Rhone	1846
S. Africa	Cape Town	1856
France	Midi	2008
Italy	Tuscany (Chianti)	2021
USA	Lodi, CA	2067
Australia	Hunter Valley, N.S.W.	2074

Climatic category—Very Hot (day-degrees °C ≥ 2101)

Argentina	Andean foothills	2169
Spain	Catalonia	2177
Australia	Murray River, Vic.	2376
Italy	Sicily	2416
Spain	Jerez & Malaga	2522
USA	Fresno, CA	2600
Greece	Attica, Aegean Coast	2676
Israel	Tel Aviv	3011
Algeria	Algiers	3273

Cold to Mild

The only 'traditional' viticultural region that appears to be in the **Cold category** is that along the banks of the Elbe River in Northern Czechoslavakia: the temperature summation for Prague, just south of this region, is 867 day-degrees °C.

Otherwise this category includes a multitude of small vineyards which have proliferated in southern England in recent years. A vineyard which may represent the current lower limit of the Cold category is that at Longueville House just outside Mallow, County Cork, Ireland, with only 554 day-degrees. Only early white grape varieties, such as Muller-Thurgau and Reichensteiner, are of importance in the vineyards of the Cold category.

The **Cool category** includes the German, Austrian, Swiss, and most of the Czechoslovakian regions, as well as the more northerly French regions, such as Champagne, Alsace, Loire Valley, and Burgundy. It also includes some of the recent higher-latitude plantings in new regions such as Tasmania, the South Island of New Zealand, and the Willamette Valley, Oregon, as well as the coolest regions of California.

White grape varieties such as Rhine Riesling, Sylvaner, Muller-Thurgau, Chardonnay, Traminer, and Chasselas predominate. In some of these regions, there is a substantial proportion of early red varieties such as Portugieser and—especially in Burgundy—Pinot Noir.

Bordeaux is in the **Mild category**. There, such red varieties as

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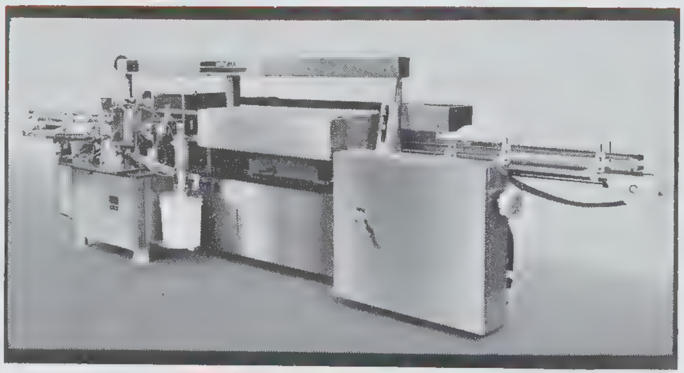

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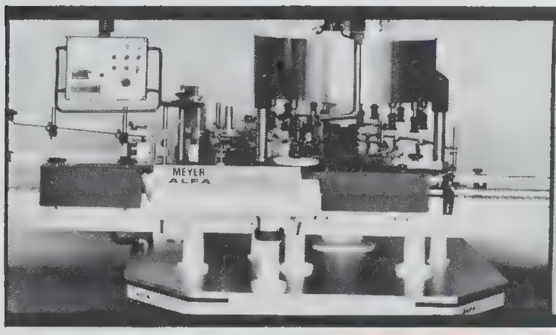

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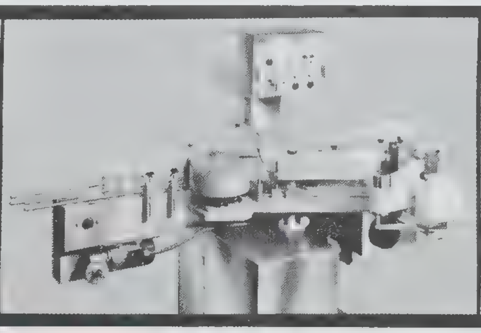

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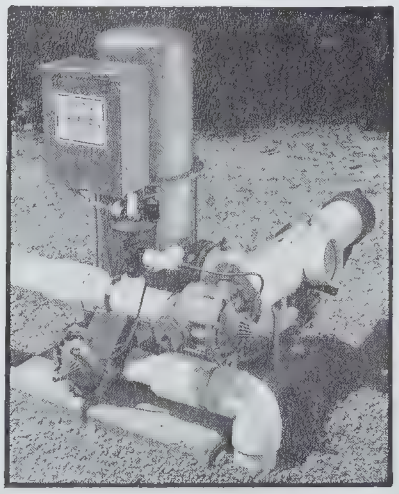

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Other important European wine regions are Moldavia on both sides of the Romanian-Russian border, and Eger (and perhaps also Tokaj) in Hungary. Much of the Chilean wine industry is in this category, as are some recent North American plantings in Oregon and Washington, and the extensive new plantings around Coonawarra, South Australia.

California is well-represented by areas in Santa Cruz and Santa Clara Counties, and by the northern end of the Salinas Valley in Monterey County (15). Varieties such as Chardonnay, Rhine Riesling, and Pinot Noir—largely confined to the cool regions in France and Germany—are also found in the Mild, and even warmer, categories in other countries.

Warm to Very Hot

In the **Warm category** is Piemonte, famous for red wines based on the Nebbiolo grape. Here also we find the Rioja region of northeastern Spain, known for red wines from the Tempranillo variety, and the Russian wine districts in the Crimea and Krasnodar Province on the northern shores of the Black Sea. California is represented by the Napa Valley, Sonoma County, and most of the Salinas Valley, and Australia by the Barossa Valley of South Australia and the Rutherglen district of northeastern Victoria.

The **Hot category** includes Tuscany in Italy where Chianti is made from the red Sangiovese grape. In the Hot Italian wine districts, extensive use is made of the late-ripening Trebbiano variety for white wine. In southern France, the major bulk-

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wine-producing region, the Midi, is in this category. Red varieties such as Carignane, Cinsaut, and Grenache, and white varieties such as Clairette, are found in the Midi and other Hot regions. Chateauneuf-du-Pape in the lower Rhone Valley, with its red wine based mainly on Grenache, is also in this category.

In California, Lodi in the cooler northern end of the Central Valley, and the region of central northern Victoria around Shepparton and the Hunter Valley in New South Wales in Australia, are in the Hot category. The vineyards of southern Cape Province around Stellenbosch and Paarl near Cape Town in South Africa are included.

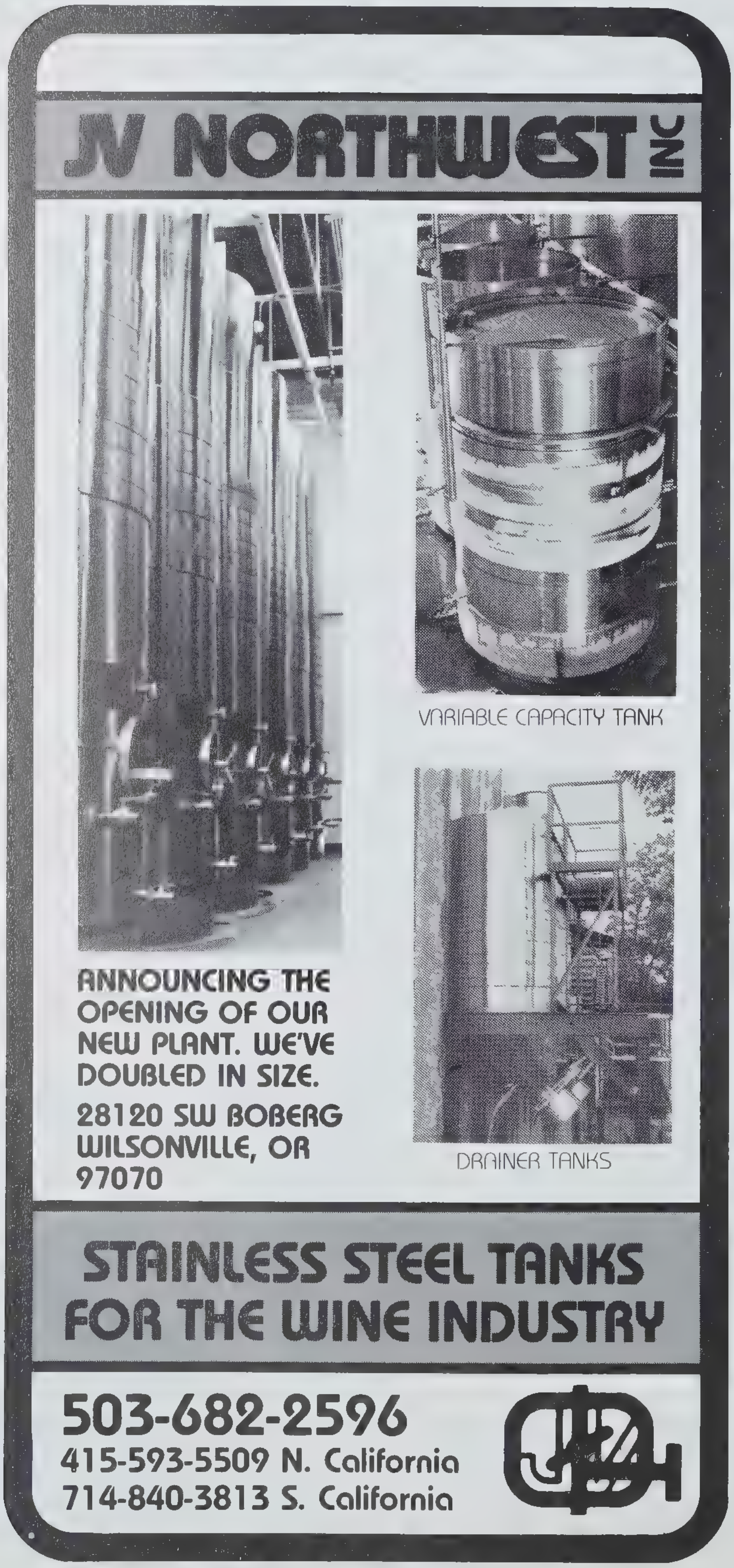
The **Very Hot category** encompasses a number of important viticultural areas in semi-arid regions where very large quantities of wine are produced under irrigation. This includes most of the Central Valley of California, the irrigation districts along the Murray and Murrumbidgee Rivers in Australia, and the vineyards of Mendoza Province in Argentina. It also includes most of the wine regions around the coast of the Mediterranean.

Usefulness and Pitfalls

Climatic classification systems are of value in viticultural science since they make it easier to digest the large amount of data for the very wide range of climates in which the vine is grown throughout the world. On the basis of the information in Table 1, and the above discussion, I suggest that the classification proposed here corresponds reasonably well to groupings of wine regions that are already in large part intuitively recognized in this field, and that it may therefore prove to be of use to those engaged in the practice of, or research into, viticulture.

One-dimensional climatic classification systems, such as that of Amerine and Winkler, or the one proposed here, should be used with some caution since they are unavoidably simplistic. They may lead to the lumping together of areas with what may be significant differences in climatic parameters other than the one used for the classification. For example, Geneva, New York, has a much more continental climate than Roseburg, Oregon, although temperature summation places both in the Mild category.

Unfortunately, at present we know relatively little about the effects of other climatic parameters—such as continentality or humidity—on grape and wine quality.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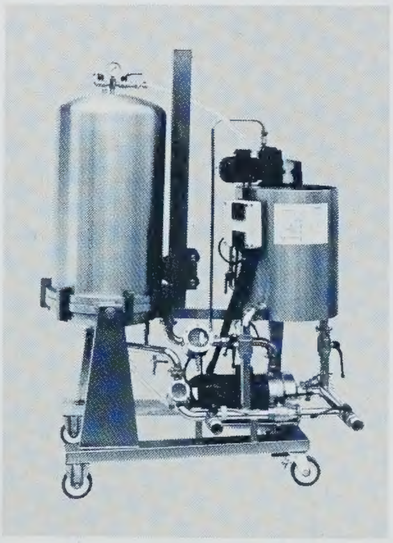

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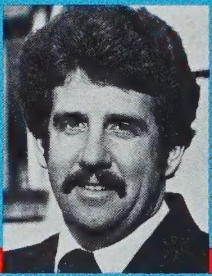

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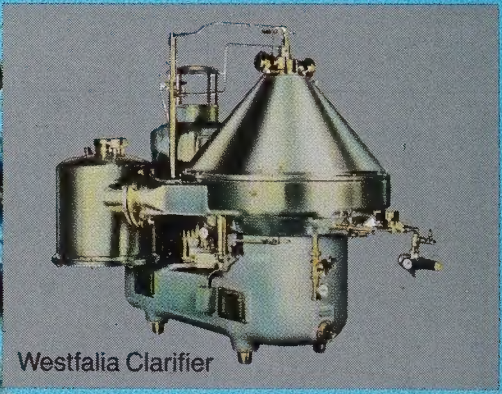

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